

5

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.

Bmml-20141128AIE

SECTION I - APPLICANT FEE INFORMATION

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

Cooley LLP

MAILING ADDRESS (Line 1) (Maximum 35 characters)

1299 Pennsylvania Avenue, NW

MAILING ADDRESS (Line 2) (Maximum 35 characters)

Suite 700

CITY

Washington

STATE OR COUNTRY (if foreign address)

DC

ZIP CODE

20004

TELEPHONE NUMBER (include area code)

202-776-2588

CALL LETTERS

KRMG (AM)

OTHER FCC IDENTIFIER (If applicable)

48729

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		
M	M	R

(B)

FEE MULTIPLE			
0	0	0	1

(C)

FEE DUE FOR FEE TYPE CODE IN COLUMN (A)
\$690.00

FOR FCC USE ONLY

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

(A)

FEE TYPE CODE		
M	O	R

(B)

FEE MULTIPLE			
0	0	0	1

(C)

FEE DUE FOR FEE TYPE CODE IN COLUMN (A)
\$790.00

FOR FCC USE ONLY

ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.

TOTAL AMOUNT REMITTED WITH THIS APPLICATION

\$1,480.00

FOR FCC USE ONLY

2014 NOV 28 P 2:40

05/11/2014

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Cox Radio, Inc.		
MAILING ADDRESS 7136 South Yale		
CITY Tulsa	STATE OK	ZIP CODE 74136

2. This application is for:

☒ Commercial
 ☐ Noncommercial
☒ AM Directional
 ☐ AM Non-Directional

Call letters KRMG (AM)	Community of License Tulsa, OK	Construction Permit File No. N/A	Modification of Construction Permit File No(s). N/A	Expiration Date of Last Construction Permit N/A
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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.

Exhibit No.
N/A

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.
N/A

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.
N/A

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

If No, explain in an Exhibit.

☒ Does not apply

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.

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 Shauna S. Muhl	Signature 	
Title Secretary	Date 11-17-14	Telephone Number 678-645-0954

**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 (3060-0827), 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
Cox Radio, Inc.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)



Station License



Direct Measurement of Power

1. Facilities authorized in construction permit					
Call Sign KRMG	File No. of Construction Permit (if applicable) N/A	Frequency (kHz) 740	Hours of Operation Unlimited	Power in kilowatts	
				Night 25.0	Day 50.0
2. Station location					
State Oklahoma			City or Town Tulsa		
3. Transmitter location					
State Oklahoma	County Tulsa		City or Town Sand Springs	Street address (or other identification) 5801 S. 265th W. Ave.	
4. Main studio location					
State Oklahoma	County Tulsa		City or Town Tulsa	Street address (or other identification) 7136 S Yale, Suite 500	
5. Remote control point location (specify only if authorized directional antenna)					
State Oklahoma	County Tulsa		City or Town Tulsa	Street address (or other identification) 7136 S Yale, Suite 500	

6. Has type-approved stereo generating equipment been installed?



Yes



No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68?



Yes



No



Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed.

Exhibit No.
E-1

8. Operating constants:						
RF common point or antenna current (in amperes) without modulation for night system 22.9			RF common point or antenna current (in amperes) without modulation for day system 32.4			
Measured antenna or common point resistance (in ohms) at operating frequency Night 50 Day 50			Measured antenna or common point reactance (in ohms) at operating frequency Night 0 Day 0			
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
1 (day tower 3, night tower 1)	-16.5	-5.7	0.641	0.527		
2 (day tower 1, night tower 2)	0.0	0.0	1.000	1.000		
3 (day tower 2, night tower 3)	13.25	-10.7	0.515	0.538		
4 (Night tower 4)	-46.8	----	0.480	----		
5 (Night tower 5)	-60.8	----	0.992	----		
6 (Night tower 6)	-74.3	----	0.650	----		
Manufacturer and type of antenna monitor: Potomac Instruments AM-1901, serial number 144.						

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	See Exhibit E-1	See Exhibit E-1	See Exhibit E-1	Exhibit No. N/A

Excitation ☒ 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	36 ° 04 ' 50 "	West Longitude	96 ° 17 ' 09 "
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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.
N/A

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system.

Exhibit No.
N/A

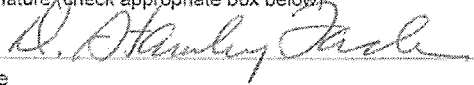
10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

none

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

N/A

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) D. Stanley Tacker	Signature (check appropriate box below) 
Address (include ZIP Code) 6797 E. 525 Road Claremore, OK 74019	Date 11/07/2014
	Telephone No. (Include Area Code) 918-629-1380

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☒ Technical Consultant

☐ Other (specify)



ORIGINAL

John S. Logan
T: +1 202 776 2640
jlogan@cooley.com

BY HAND DELIVERY

November 17, 2014

VIA COURIER

Federal Communications Commission
c/o U.S. Bank – Government Lockbox #979089
SL-MO-C2-GL
1005 Convention Plaza
St. Louis, MO 63101
ATTN: FCC Government Lockbox

RE: KRMG(AM), Tulsa, Oklahoma (Facility ID No. 48729)
Application for License using Method of Moments

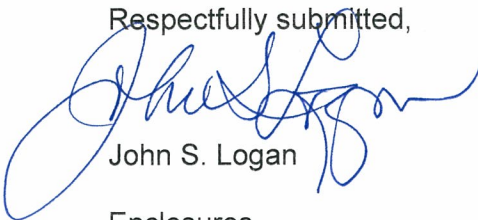
Dear Ms. Dortch:

On behalf of our client Cox Radio, Inc., licensee of KRMG(AM), Tulsa, Oklahoma, we hereby submit, in triplicate, an application on FCC Form 302-AM for an AM broadcast license, using the "Method of Moments" modeling permitted by the FCC's rules for eligible AM directional arrays.

A Form 159 (Remittance Advice) is also enclosed, with information regarding payment of the required fee of \$1,480.00 by credit card.

Please inform me if any questions should arise regarding this submission.

Respectfully submitted,



John S. Logan

Enclosures

From: (202) 842-7800
John Logan
Cooley LLP
1299 Pennsylvania Avenue, Suite 700
Washington, DC 20004

Origin ID: RDVA



J142214092303uv

Ship Date: 17NOV14
ActWgt: 3.0 LB
CAD: 103882864WSX12500

Delivery Address Bar Code



SHIP TO: 18882255322

BILL SENDER

Federal Communications Commission
c/o U.S. Bank-Govt. Lockbox #979089
1005 CONVENTION PLZ

SL-MO-C2-GL

SAINT LOUIS, MO 63101

ATTN: FCC Govt. Lockbox

Ref # 504092-102-17629
Invoice #
PO #
Dept #

U.S. BANK NOV 19 2014

TUE - 18 NOV 10:30A
PRIORITY OVERNIGHT

TRK# 7718 8920 4238

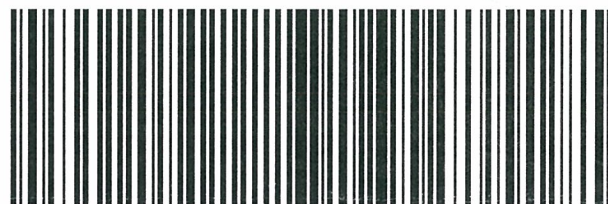
0201

NA CPSA

63101

MO-US

STL



FOLD on this line and place in shipping pouch with bar code and delivery address visible

1. Fold the first printed page in half and use as the shipping label.
2. Place the label in a waybill pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.
3. Keep the second page as a receipt for your records. The receipt contains the terms and conditions of shipping and information useful for tracking your package.

Exhibit E-1

Application for License Information

KRMG (AM)

Tulsa, Oklahoma

Cox Radio, Inc.

November 1, 2014

740 kHz 50 kW-D/25 kW-N DA-2

Summary

This engineering exhibit supports an application for license for the existing day and night directional antenna system of radio station KRMG (AM), Tulsa, Oklahoma (facility ID number 48729) pursuant to the AM technical rules permitting moment-method modeling of eligible AM directional arrays.

Information is provided herein showing that the directional antenna parameters for the day and night patterns authorized by the FCC have been determined in accordance with the requirements of 47 C.F.R. §73.151. The system has been adjusted to produce antenna monitor parameters within ± 5 percent in ratio and ± 3 degrees in phase of the modeled values, as required by the Rules. A modified station license is requested specifying the new day and night operating parameters.

Because KRMG is an existing licensed facility, it is exempt from the requirement to submit a surveyor's certification. (See, Public Notice, "Media Bureau Clarifies Procedures for AM Directional Antenna Performance Verification Using Moment Method Modeling" FCC DA 09-2340). Additionally, the registration numbers of the KRMG towers are shown on the existing license; however, they are again indicated at the end of this exhibit.

Analysis of Tower Impedance Measurements to Verify Method of Moments Model

KRMG uses 6 towers in their night array, and 3 of those 6 in the day time array. For the purpose of demonstrating the tower calibration models shown below, the night time tower numbers are used. The day towers are numbered differently on the station license and that will be explained later in this exhibit.

Tower base impedance measurements were made directly at the base of the towers at the output of the Antenna Tuning Units using a Delta Electronics OIB-1 operating impedance bridge. Resistance and reactance measurements were also measured using a Power Aim-120 and those measurements were in agreement with the results returned by the Delta bridge. All other towers were open circuited at the same point when impedance measurements were made. Downstream of the ATU output, there is only a static drain, a piece of feed tubing connecting the ATU outputs and the tower bases.

ACSModel (MININEC 3.1 core) was used to model the KRMG array.

A lumped load with a reactance of $-j10,000$ was modeled at the base of the other towers to simulate an open circuit at each tower base.

The tower heights in the array were adjusted in the model in order to achieve calibration of the model with the measured impedances. All modeled tower heights were within 75 to 125 percent of the physical tower height as required by the FCC rules.

The modeled radius for each tower was the physical radius of the tower as determined by $4T/2\pi$, where T is the tower face width in meters. The KRMG towers are uniform cross section towers and have face widths of 0.508 meters. Each tower's radius was modeled at 0.3234 meters.

The towers are fed from the ATU with a short length of copper tubing, with up to two loops for lightning protection and therefore show some amount of inductive reactance. The tubing is bonded to each tower just above the base insulator.

A circuit model was constructed for each tower using the static drain reactance, the assumed series fed tubing and shunt base region reactance. The static drain reactance was predicted using the manufactures' predicted inductive reactance. This model was used with WCAP Professional 1.1.02 to determine the effects of this reactance on the ATU output of each tower. In each of the WCAP tabulations, node 2 represents the ATU output reference point and node 3 represents the tower base as shown on the circuit model schematic provided with each tabulation. Node 0 represents ground potential. The ATU output impedances are found in the "TO IMPEDANCE" column of each WCAP tabulation, following the phantom 1.0 ohm resistor inserted in the model to provide a calculation point for the impedance. The complex base impedance of each tower from the moment method is represented in each case by the complex load from Node 3 to ground. A value of 80 pF was assumed for the base insulators.

§73.151(c)(1)(vii) permits the use of a lumped series inductance of 10 uH or less between the output port of the antenna tuning unit and the associated tower. In each case, the value of lumped series inductance was below the 10 uH limit.

The WCAP circuit model tabulation immediately follows the model for each tower.

The modeled and measured impedances at the ATU output with the other towers open-circuited at their ATU output agree within +/- 2 ohms and +/- 4% as required by the FCC rules.

Table 1 – Analysis of Tower Impedance Measurements to Verify Moment Method Model

Tower number	Zbase (modeled) -j	Zatu (modeled) -j	Zatu (measured) -j	Series L (uH)	Shunt C (pF)	Phys. Height (deg.)	Model Height (deg.)	% Phys. Height
1	25.971 -46.1	25.16 -16.78	25.16 -16.78	6.185	80	73.7	77.37	105
2	26.378 -45.475	25.61 -28.61	25.6 -28.63	3.51	80	73.7	77.45	105.1
3	25.061 -51.081	24.22 -24.872	24.22 -24.86	5.48	80	73.7	76.39	103.6
4	27.652 -37.761	26.94 -14.131	26.94 -14.13	5.02	80	73.7	78.96	107.1
5	27.867 -38.186	27.18 -23.221	27.17 -23.24	3.16	80	73.7	78.84	107
6	26.159 -45.423	25.4 -28.65	25.4 -28.67	3.5	80	73.7	77.47	105.1

```

*****
                        ACSModel
                    (MININEC 3.1 Core)
                07-27-2014                19:06:48
*****

```

KRMG Tower 1 Calibration Model
Tower 1 driven, all other floating

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1 No. of X	Coordinates Y		Z	Radius	End Connection
Segments					
0	0	0			-1
0	0	87.07029	0.3234		0
20					

Wire No. 2 No. of X	Coordinates Y		Z	Radius	End Connection
Segments					
216.1143	-38.10678	0			-2
216.1143	-38.10678	87.16032	0.3234		0
20					

Wire No. 3 No. of X	Coordinates Y		Z	Radius	End Connection
Segments					
432.2286	-76.21356	0			-3
432.2286	-76.21356	85.96742	0.3234		0
20					

Wire No. 4 No. of X	Coordinates Y		Z	Radius	End Connection
Segments					
671.0327	90.72719	0			-4
671.0327	90.72719	88.85964	0.3234		0
20					

Wire No. 5 No. of	Coordinates				End

X	Y	Z	Radius	Connection
Segments				
455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0
20				

Wire No. 6	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0
20				

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6
0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15
0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No. 2	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
216.1143	-38.10678	0	0.3234	-2	2	21
216.1143	-38.10678	4.358016	0.3234	2	2	22
216.1143	-38.10678	8.716032	0.3234	2	2	23
216.1143	-38.10678	13.07405	0.3234	2	2	24
216.1143	-38.10678	17.43206	0.3234	2	2	25
216.1143	-38.10678	21.79008	0.3234	2	2	26
216.1143	-38.10678	26.1481	0.3234	2	2	27
216.1143	-38.10678	30.50611	0.3234	2	2	28
216.1143	-38.10678	34.86413	0.3234	2	2	29

216.1143	-38.10678	39.22215	0.3234	2	2	30
216.1143	-38.10678	43.58016	0.3234	2	2	31
216.1143	-38.10678	47.93818	0.3234	2	2	32
216.1143	-38.10678	52.29619	0.3234	2	2	33
216.1143	-38.10678	56.65421	0.3234	2	2	34
216.1143	-38.10678	61.01223	0.3234	2	2	35
216.1143	-38.10678	65.37025	0.3234	2	2	36
216.1143	-38.10678	69.72826	0.3234	2	2	37
216.1143	-38.10678	74.08627	0.3234	2	2	38
216.1143	-38.10678	78.44429	0.3234	2	2	39
216.1143	-38.10678	82.80231	0.3234	2	0	40

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	
432.2286	-76.21356	81.66905	0.3234	3	0	60	

Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	
671.0327	90.72719	48.8728	0.3234	4	4	72	
671.0327	90.72719	53.31578	0.3234	4	4	73	

671.0327	90.72719	57.75877	0.3234	4	4	74
671.0327	90.72719	62.20175	0.3234	4	4	75
671.0327	90.72719	66.64473	0.3234	4	4	76
671.0327	90.72719	71.08772	0.3234	4	4	77
671.0327	90.72719	75.53069	0.3234	4	4	78
671.0327	90.72719	79.97368	0.3234	4	4	79
671.0327	90.72719	84.41666	0.3234	4	0	80

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	
455.0163	128.7566	62.10722	0.3234	5	5	95	
455.0163	128.7566	66.54344	0.3234	5	5	96	
455.0163	128.7566	70.97968	0.3234	5	5	97	
455.0163	128.7566	75.41591	0.3234	5	5	98	
455.0163	128.7566	79.85213	0.3234	5	5	99	
455.0163	128.7566	84.28837	0.3234	5	0	100	

Wire No.	6	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
238.7601	167.1816	0	0.3234	-6	6	101	
238.7601	167.1816	4.359141	0.3234	6	6	102	
238.7601	167.1816	8.718283	0.3234	6	6	103	
238.7601	167.1816	13.07743	0.3234	6	6	104	
238.7601	167.1816	17.43657	0.3234	6	6	105	
238.7601	167.1816	21.79571	0.3234	6	6	106	
238.7601	167.1816	26.15485	0.3234	6	6	107	
238.7601	167.1816	30.51399	0.3234	6	6	108	
238.7601	167.1816	34.87313	0.3234	6	6	109	
238.7601	167.1816	39.23228	0.3234	6	6	110	
238.7601	167.1816	43.59142	0.3234	6	6	111	
238.7601	167.1816	47.95055	0.3234	6	6	112	
238.7601	167.1816	52.3097	0.3234	6	6	113	
238.7601	167.1816	56.66884	0.3234	6	6	114	
238.7601	167.1816	61.02798	0.3234	6	6	115	
238.7601	167.1816	65.38712	0.3234	6	6	116	
238.7601	167.1816	69.74626	0.3234	6	6	117	

238.7601	167.1816	74.10541	0.3234	6	6	118
238.7601	167.1816	78.46455	0.3234	6	6	119
238.7601	167.1816	82.82368	0.3234	6	0	120

Sources: 1

Pulse No., Voltage Magnitude, Phase (Degrees): 1, 100.0, 0.0

Number of Loads: 5

Pulse No., Resistance, Reactance: 21 , 0 ,-10000
Pulse No., Resistance, Reactance: 41 , 0 ,-10000
Pulse No., Resistance, Reactance: 61 , 0 ,-10000
Pulse No., Resistance, Reactance: 81 , 0 ,-10000
Pulse No., Resistance, Reactance: 101 , 0 ,-10000

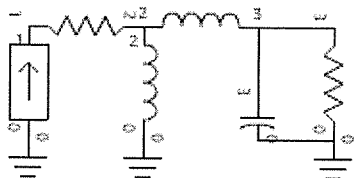
***** SOURCE DATA *****
Pulse 1 Voltage = (100.0, 0.0j)
Current = (0.9276, 1.6466j)
Impedance = (25.971, -46.1j)
Power = 46.38 Watts

WCAP - KRMG Tower 1 Calibration Model

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node:	1	31.0802 \angle	-32.6719° V
Node:	2	30.2433 \angle	-33.6946° V
Node:	3	52.0822 \angle	-61.0428° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	1.00 \angle	0.000° V	1.00 \angle	0.000° A
L	2→0	2920.70000000	30.24 \angle	-33.695° V	0.00 \angle	-123.695° A
L	2→3	6.18500000	28.79 \angle	90.106° V	1.00 \angle	0.106° A

C	3→0	0.00008000	52.08	∠	-61.043°	V	0.02	∠	28.957°	A
R	3→0	25.97100000	52.08	∠	-61.043°	V	0.98	∠	-0.438°	A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE
R	1→2	1.00000000	26.16	- j	16.778
L	2→0	2920.70000000	0.00	+ j	13579.962
L	2→3	6.18500000	25.10	- j	16.804
C	3→0	0.00008000	0.00	- j	2688.428
R	3→0	25.97100000	25.97	- j	46.100

WCAP INPUT DATA:

	0.7400	0.00000000	0
I	1.00000000	0	1
R	1.00000000	1	2
L	2920.70000000	2	0
L	6.18500000	2	3
C	0.00008000	3	0
R	25.97100000	3	0

 ACSModel
 (MININEC 3.1 Core)
 07-27-2014 19:14:23

KRMG Tower 2 Calibration Model

Tower 2 driven, all others floating

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
0	0	0		-1
0	0	87.07029	0.3234	0
20				

Wire No. 2	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
216.1143	-38.10678	0		-2
216.1143	-38.10678	87.16032	0.3234	0
20				

Wire No. 3	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0
20				

Wire No. 6	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0
20				

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6
0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15

0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No.	2	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
216.1143	-38.10678	0	0.3234	-2	2	21	
216.1143	-38.10678	4.358016	0.3234	2	2	22	
216.1143	-38.10678	8.716032	0.3234	2	2	23	
216.1143	-38.10678	13.07405	0.3234	2	2	24	
216.1143	-38.10678	17.43206	0.3234	2	2	25	
216.1143	-38.10678	21.79008	0.3234	2	2	26	
216.1143	-38.10678	26.1481	0.3234	2	2	27	
216.1143	-38.10678	30.50611	0.3234	2	2	28	
216.1143	-38.10678	34.86413	0.3234	2	2	29	
216.1143	-38.10678	39.22215	0.3234	2	2	30	
216.1143	-38.10678	43.58016	0.3234	2	2	31	
216.1143	-38.10678	47.93818	0.3234	2	2	32	
216.1143	-38.10678	52.29619	0.3234	2	2	33	
216.1143	-38.10678	56.65421	0.3234	2	2	34	
216.1143	-38.10678	61.01223	0.3234	2	2	35	
216.1143	-38.10678	65.37025	0.3234	2	2	36	
216.1143	-38.10678	69.72826	0.3234	2	2	37	
216.1143	-38.10678	74.08627	0.3234	2	2	38	
216.1143	-38.10678	78.44429	0.3234	2	2	39	
216.1143	-38.10678	82.80231	0.3234	2	0	40	

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	

432.2286	-76.21356	81.66905	0.3234	3	0	60
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Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	
671.0327	90.72719	48.8728	0.3234	4	4	72	
671.0327	90.72719	53.31578	0.3234	4	4	73	
671.0327	90.72719	57.75877	0.3234	4	4	74	
671.0327	90.72719	62.20175	0.3234	4	4	75	
671.0327	90.72719	66.64473	0.3234	4	4	76	
671.0327	90.72719	71.08772	0.3234	4	4	77	
671.0327	90.72719	75.53069	0.3234	4	4	78	
671.0327	90.72719	79.97368	0.3234	4	4	79	
671.0327	90.72719	84.41666	0.3234	4	0	80	

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	
455.0163	128.7566	62.10722	0.3234	5	5	95	
455.0163	128.7566	66.54344	0.3234	5	5	96	
455.0163	128.7566	70.97968	0.3234	5	5	97	
455.0163	128.7566	75.41591	0.3234	5	5	98	
455.0163	128.7566	79.85213	0.3234	5	5	99	
455.0163	128.7566	84.28837	0.3234	5	0	100	

Wire No.	6	Coordinates			Connection		
Pulse							

X	Y	Z	Radius	End1	End2	No.
238.7601	167.1816	0	0.3234	-6	6	101
238.7601	167.1816	4.359141	0.3234	6	6	102
238.7601	167.1816	8.718283	0.3234	6	6	103
238.7601	167.1816	13.07743	0.3234	6	6	104
238.7601	167.1816	17.43657	0.3234	6	6	105
238.7601	167.1816	21.79571	0.3234	6	6	106
238.7601	167.1816	26.15485	0.3234	6	6	107
238.7601	167.1816	30.51399	0.3234	6	6	108
238.7601	167.1816	34.87313	0.3234	6	6	109
238.7601	167.1816	39.23228	0.3234	6	6	110
238.7601	167.1816	43.59142	0.3234	6	6	111
238.7601	167.1816	47.95055	0.3234	6	6	112
238.7601	167.1816	52.3097	0.3234	6	6	113
238.7601	167.1816	56.66884	0.3234	6	6	114
238.7601	167.1816	61.02798	0.3234	6	6	115
238.7601	167.1816	65.38712	0.3234	6	6	116
238.7601	167.1816	69.74626	0.3234	6	6	117
238.7601	167.1816	74.10541	0.3234	6	6	118
238.7601	167.1816	78.46455	0.3234	6	6	119
238.7601	167.1816	82.82368	0.3234	6	0	120

Sources: 1

Pulse No., Voltage Magnitude, Phase (Degrees): 21, 100.0, 0.0

Number of Loads: 5

Pulse No., Resistance, Reactance: 1 , 0 ,-10000

Pulse No., Resistance, Reactance: 41 , 0 ,-10000

Pulse No., Resistance, Reactance: 61 , 0 ,-10000

Pulse No., Resistance, Reactance: 81 , 0 ,-10000

Pulse No., Resistance, Reactance: 101 , 0 ,-10000

```

***** SOURCE DATA *****
Pulse 21      Voltage = (100.0, 0.0j)
              Current = (0.9544, 1.6454j)
              Impedance = (26.378, -45.475j)
              Power = 47.72 Watts

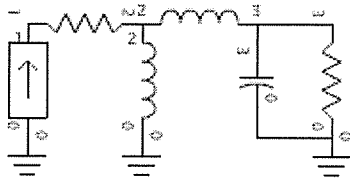
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WCAP - KRMG Tower 2 Calibration Model

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node:	1	39.1094 \angle	-47.1187° V
Node:	2	38.4359 \angle	-48.2111° V
Node:	3	51.8048 \angle	-60.3294° V

WCAP PART			CURRENT IN		CURRENT OUT	
WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	1.00 \angle	0.000° V	1.00 \angle	0.000° A
L	2→0	2920.70000000	38.44 \angle	-48.211° V	0.00 \angle	-138.211° A
L	2→3	3.51000000	16.35 \angle	90.108° V	1.00 \angle	0.108° A
C	3→0	0.00008000	51.80 \angle	-60.329° V	0.02 \angle	29.671° A
R	3→0	26.37800000	51.80 \angle	-60.329° V	0.99 \angle	-0.445° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	26.61 - j	28.658	25.61 - j	28.610
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	3.51000000	25.51 - j	28.646	25.51 - j	44.966
C	3→0	0.00008000	-0.00 - j	2688.428	0.00 + j	0.000
R	3→0	26.37800000	26.38 - j	45.475	0.00 + j	0.000

WCAP INPUT DATA:

	0.7400	0.00000000	0
I	1.00000000	0	1
R	1.00000000	1	2
L	2920.70000000	2	0
L	3.51000000	2	3

```

C      0.00008000   3   0
R      26.37800000   3   0   -45.47500000

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                        ACSModel
                      (MININEC 3.1 Core)
                    07-27-2014      19:23:18
*****

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KRMG Tower 3 Calibration Model
Tower 3 driven, all others floating

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1 No. of X Segments	Coordinates Y	Z	Radius	End Connection
0	0	0		-1
0	0	87.07029	0.3234	0
20				

Wire No. 2 No. of X Segments	Coordinates Y	Z	Radius	End Connection
216.1143	-38.10678	0		-2
216.1143	-38.10678	87.16032	0.3234	0
20				

Wire No. 3 No. of X Segments	Coordinates Y	Z	Radius	End Connection
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4 No. of X Segments	Coordinates Y	Z	Radius	End Connection
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5	Coordinates			End
No. of	X	Y	Z	Radius
Segments				Connection
455.0163		128.7566	0	-5
455.0163		128.7566	88.72459	0.3234
20				0

Wire No. 6	Coordinates			End
No. of	X	Y	Z	Radius
Segments				Connection
238.7601		167.1816	0	-6
238.7601		167.1816	87.18283	0.3234
20				0

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse	X	Y	Z	Radius	End1	End2
No.						
0	0	0	0	0.3234	-1	1
0	0	0	4.353515	0.3234	1	1
0	0	0	8.707029	0.3234	1	1
0	0	0	13.06054	0.3234	1	1
0	0	0	17.41406	0.3234	1	1
0	0	0	21.76757	0.3234	1	1
0	0	0	26.12109	0.3234	1	1
0	0	0	30.4746	0.3234	1	1
0	0	0	34.82812	0.3234	1	1
0	0	0	39.18163	0.3234	1	1
0	0	0	43.53514	0.3234	1	1
0	0	0	47.88866	0.3234	1	1
0	0	0	52.24218	0.3234	1	1
0	0	0	56.59569	0.3234	1	1
0	0	0	60.9492	0.3234	1	1
0	0	0	65.30272	0.3234	1	1
0	0	0	69.65623	0.3234	1	1
0	0	0	74.00975	0.3234	1	1
0	0	0	78.36327	0.3234	1	1
0	0	0	82.71677	0.3234	1	0

Wire No. 2	Coordinates			Connection		
Pulse	X	Y	Z	Radius	End1	End2
No.						
216.1143		-38.10678	0	0.3234	-2	2
216.1143		-38.10678	4.358016	0.3234	2	2
216.1143		-38.10678	8.716032	0.3234	2	2
216.1143		-38.10678	13.07405	0.3234	2	2
216.1143		-38.10678	17.43206	0.3234	2	2
216.1143		-38.10678	21.79008	0.3234	2	2
216.1143		-38.10678	26.1481	0.3234	2	2

216.1143	-38.10678	30.50611	0.3234	2	2	28
216.1143	-38.10678	34.86413	0.3234	2	2	29
216.1143	-38.10678	39.22215	0.3234	2	2	30
216.1143	-38.10678	43.58016	0.3234	2	2	31
216.1143	-38.10678	47.93818	0.3234	2	2	32
216.1143	-38.10678	52.29619	0.3234	2	2	33
216.1143	-38.10678	56.65421	0.3234	2	2	34
216.1143	-38.10678	61.01223	0.3234	2	2	35
216.1143	-38.10678	65.37025	0.3234	2	2	36
216.1143	-38.10678	69.72826	0.3234	2	2	37
216.1143	-38.10678	74.08627	0.3234	2	2	38
216.1143	-38.10678	78.44429	0.3234	2	2	39
216.1143	-38.10678	82.80231	0.3234	2	0	40

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	
432.2286	-76.21356	81.66905	0.3234	3	0	60	

Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	

671.0327	90.72719	48.8728	0.3234	4	4	72
671.0327	90.72719	53.31578	0.3234	4	4	73
671.0327	90.72719	57.75877	0.3234	4	4	74
671.0327	90.72719	62.20175	0.3234	4	4	75
671.0327	90.72719	66.64473	0.3234	4	4	76
671.0327	90.72719	71.08772	0.3234	4	4	77
671.0327	90.72719	75.53069	0.3234	4	4	78
671.0327	90.72719	79.97368	0.3234	4	4	79
671.0327	90.72719	84.41666	0.3234	4	0	80

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	
455.0163	128.7566	62.10722	0.3234	5	5	95	
455.0163	128.7566	66.54344	0.3234	5	5	96	
455.0163	128.7566	70.97968	0.3234	5	5	97	
455.0163	128.7566	75.41591	0.3234	5	5	98	
455.0163	128.7566	79.85213	0.3234	5	5	99	
455.0163	128.7566	84.28837	0.3234	5	0	100	

Wire No.	6	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
238.7601	167.1816	0	0.3234	-6	6	101	
238.7601	167.1816	4.359141	0.3234	6	6	102	
238.7601	167.1816	8.718283	0.3234	6	6	103	
238.7601	167.1816	13.07743	0.3234	6	6	104	
238.7601	167.1816	17.43657	0.3234	6	6	105	
238.7601	167.1816	21.79571	0.3234	6	6	106	
238.7601	167.1816	26.15485	0.3234	6	6	107	
238.7601	167.1816	30.51399	0.3234	6	6	108	
238.7601	167.1816	34.87313	0.3234	6	6	109	
238.7601	167.1816	39.23228	0.3234	6	6	110	
238.7601	167.1816	43.59142	0.3234	6	6	111	
238.7601	167.1816	47.95055	0.3234	6	6	112	
238.7601	167.1816	52.3097	0.3234	6	6	113	
238.7601	167.1816	56.66884	0.3234	6	6	114	
238.7601	167.1816	61.02798	0.3234	6	6	115	

238.7601	167.1816	65.38712	0.3234	6	6	116
238.7601	167.1816	69.74626	0.3234	6	6	117
238.7601	167.1816	74.10541	0.3234	6	6	118
238.7601	167.1816	78.46455	0.3234	6	6	119
238.7601	167.1816	82.82368	0.3234	6	0	120

Sources: 1

Pulse No., Voltage Magnitude, Phase (Degrees): 41, 100.0, 0.0

Number of Loads: 5

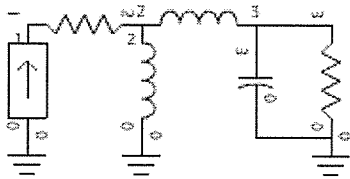
Pulse No., Resistance, Reactance: 1 , 0 , -10000
Pulse No., Resistance, Reactance: 21 , 0 , -10000
Pulse No., Resistance, Reactance: 61 , 0 , -10000
Pulse No., Resistance, Reactance: 81 , 0 , -10000
Pulse No., Resistance, Reactance: 101 , 0 , -10000

```
***** SOURCE DATA *****
Pulse 41      Voltage = (100.0, 0.0j)
              Current = (0.7741, 1.5779j)
              Impedance = (25.061, -51.081j)
              Power = 38.71 Watts
```

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 35.4226 \angle -44.6003° V
Node: 2 34.7177 \angle -45.7592° V
Node: 3 55.9366 \angle -64.2890° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	1.00 \angle	0.000° V	1.00 \angle	0.000° A
L	2→0	2920.70000000	34.72 \angle	-45.759° V	0.00 \angle	-135.759° A
L	2→3	5.48000000	25.53 \angle	90.102° V	1.00 \angle	0.102° A
C	3→0	0.00008000	55.94 \angle	-64.289° V	0.02 \angle	25.711° A
R	3→0	25.06100000	55.94 \angle	-64.289° V	0.98 \angle	-0.422° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	25.22 - j	24.872	24.22 - j	24.872
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000

L	2→3	5.48000000	24.13 - j	24.870	24.13 - j	50.349
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	25.06100000	25.06 - j	51.081	0.00 + j	0.000

WCAP INPUT DATA:

	0.7400	0.00000000	0	
I	1.00000000	0	1	0.00000000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	5.48000000	2	3	0.00000000
C	0.00008000	3	0	
R	25.06100000	3	0	-51.08100000

 ACSModel
 (MININEC 3.1 Core)
 07-27-2014 19:31:53

KRMG Tower 4 Calibration Model

Tower 4 driven, all others floating

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
0	0	0		-1
0	0	87.07029	0.3234	0
20				

Wire No. 2	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
216.1143	-38.10678	0		-2
216.1143	-38.10678	87.16032	0.3234	0
20				

Wire No. 3	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0
20				

Wire No. 6	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0
20				

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6

0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15
0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No.	2	Coordinates			Connection		
Pulse		X	Y	Z	Radius	End1	End2 No.
216.1143			-38.10678	0	0.3234	-2	2 21
216.1143			-38.10678	4.358016	0.3234	2	2 22
216.1143			-38.10678	8.716032	0.3234	2	2 23
216.1143			-38.10678	13.07405	0.3234	2	2 24
216.1143			-38.10678	17.43206	0.3234	2	2 25
216.1143			-38.10678	21.79008	0.3234	2	2 26
216.1143			-38.10678	26.1481	0.3234	2	2 27
216.1143			-38.10678	30.50611	0.3234	2	2 28
216.1143			-38.10678	34.86413	0.3234	2	2 29
216.1143			-38.10678	39.22215	0.3234	2	2 30
216.1143			-38.10678	43.58016	0.3234	2	2 31
216.1143			-38.10678	47.93818	0.3234	2	2 32
216.1143			-38.10678	52.29619	0.3234	2	2 33
216.1143			-38.10678	56.65421	0.3234	2	2 34
216.1143			-38.10678	61.01223	0.3234	2	2 35
216.1143			-38.10678	65.37025	0.3234	2	2 36
216.1143			-38.10678	69.72826	0.3234	2	2 37
216.1143			-38.10678	74.08627	0.3234	2	2 38
216.1143			-38.10678	78.44429	0.3234	2	2 39
216.1143			-38.10678	82.80231	0.3234	2	0 40

Wire No.	3	Coordinates			Connection		
Pulse		X	Y	Z	Radius	End1	End2 No.
432.2286			-76.21356	0	0.3234	-3	3 41
432.2286			-76.21356	4.298371	0.3234	3	3 42
432.2286			-76.21356	8.596743	0.3234	3	3 43
432.2286			-76.21356	12.89511	0.3234	3	3 44
432.2286			-76.21356	17.19349	0.3234	3	3 45
432.2286			-76.21356	21.49186	0.3234	3	3 46
432.2286			-76.21356	25.79023	0.3234	3	3 47
432.2286			-76.21356	30.0886	0.3234	3	3 48
432.2286			-76.21356	34.38697	0.3234	3	3 49
432.2286			-76.21356	38.68534	0.3234	3	3 50

432.2286	-76.21356	42.98371	0.3234	3	3	51
432.2286	-76.21356	47.28208	0.3234	3	3	52
432.2286	-76.21356	51.58046	0.3234	3	3	53
432.2286	-76.21356	55.87883	0.3234	3	3	54
432.2286	-76.21356	60.1772	0.3234	3	3	55
432.2286	-76.21356	64.47557	0.3234	3	3	56
432.2286	-76.21356	68.77394	0.3234	3	3	57
432.2286	-76.21356	73.07231	0.3234	3	3	58
432.2286	-76.21356	77.37068	0.3234	3	3	59
432.2286	-76.21356	81.66905	0.3234	3	0	60

Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	
671.0327	90.72719	48.8728	0.3234	4	4	72	
671.0327	90.72719	53.31578	0.3234	4	4	73	
671.0327	90.72719	57.75877	0.3234	4	4	74	
671.0327	90.72719	62.20175	0.3234	4	4	75	
671.0327	90.72719	66.64473	0.3234	4	4	76	
671.0327	90.72719	71.08772	0.3234	4	4	77	
671.0327	90.72719	75.53069	0.3234	4	4	78	
671.0327	90.72719	79.97368	0.3234	4	4	79	
671.0327	90.72719	84.41666	0.3234	4	0	80	

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	

455.0163	128.7566	62.10722	0.3234	5	5	95
455.0163	128.7566	66.54344	0.3234	5	5	96
455.0163	128.7566	70.97968	0.3234	5	5	97
455.0163	128.7566	75.41591	0.3234	5	5	98
455.0163	128.7566	79.85213	0.3234	5	5	99
455.0163	128.7566	84.28837	0.3234	5	0	100

Wire No.	6	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
238.7601	167.1816	0	0.3234	-6	6	101	
238.7601	167.1816	4.359141	0.3234	6	6	102	
238.7601	167.1816	8.718283	0.3234	6	6	103	
238.7601	167.1816	13.07743	0.3234	6	6	104	
238.7601	167.1816	17.43657	0.3234	6	6	105	
238.7601	167.1816	21.79571	0.3234	6	6	106	
238.7601	167.1816	26.15485	0.3234	6	6	107	
238.7601	167.1816	30.51399	0.3234	6	6	108	
238.7601	167.1816	34.87313	0.3234	6	6	109	
238.7601	167.1816	39.23228	0.3234	6	6	110	
238.7601	167.1816	43.59142	0.3234	6	6	111	
238.7601	167.1816	47.95055	0.3234	6	6	112	
238.7601	167.1816	52.3097	0.3234	6	6	113	
238.7601	167.1816	56.66884	0.3234	6	6	114	
238.7601	167.1816	61.02798	0.3234	6	6	115	
238.7601	167.1816	65.38712	0.3234	6	6	116	
238.7601	167.1816	69.74626	0.3234	6	6	117	
238.7601	167.1816	74.10541	0.3234	6	6	118	
238.7601	167.1816	78.46455	0.3234	6	6	119	
238.7601	167.1816	82.82368	0.3234	6	0	120	

Sources: 1

Pulse No., Voltage Magnitude, Phase (Degrees): 61, 100.0, 0.0

Number of Loads: 5

Pulse No., Resistance, Reactance: 1 , 0 , -10000

Pulse No., Resistance, Reactance: 21 , 0 , -10000

Pulse No., Resistance, Reactance: 41 , 0 , -10000

Pulse No., Resistance, Reactance: 81 , 0 , -10000

Pulse No., Resistance, Reactance: 101 , 0 , -10000

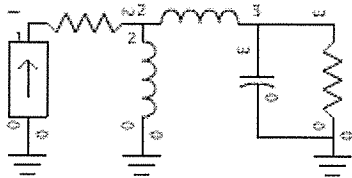
```
***** SOURCE DATA *****
Pulse 61      Voltage = (100.0, 0.0j)
              Current = (1.2624, 1.7238j)
              Impedance = (27.652, -37.761j)
              Power = 63.12 Watts
```

WCAP - KRMG Tower 4 Calibration Model

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node:	1	31.3145 \angle	-26.8253° V
Node:	2	30.4254 \angle	-27.6751° V
Node:	3	46.2005 \angle	-54.2526° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	1.00 \angle	0.000° V	1.00 \angle	0.000° A
L	2→0	2920.70000000	30.43 \angle	-27.675° V	0.00 \angle	-117.675° A
L	2→3	5.02000000	23.37 \angle	90.114° V	1.00 \angle	0.114° A
C	3→0	0.00008000	46.20 \angle	-54.253° V	0.02 \angle	35.747° A
R	3→0	27.65200000	46.20 \angle	-54.253° V	0.99 \angle	-0.468° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	27.94 - j	14.131	26.94 - j	14.131
L	2→0	2920.70000000	-0.01 + j	13579.962	0.00 + j	0.000
L	2→3	5.02000000	26.89 - j	14.170	26.89 - j	37.511
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	27.65200000	27.65 - j	37.761	0.00 + j	0.000

WCAP PART

VSWR

WCAP INPUT DATA:

	0.7400	0.00000000	0
I	1.00000000	0	1
R	1.00000000	1	2
L	2920.70000000	2	0
L	5.02000000	2	3

```

C      0.00008000   3   0
R      27.65200000   3   0   -37.76100000

```

```

*****
                        ACSModel
                      (MININEC 3.1 Core)
                    07-27-2014      19:42:54
*****

```

KRMG Tower 5 Calibration Model

Tower 5 driven, all others floating

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
0	0	0		-1
0	0	87.07029	0.3234	0
20				

Wire No. 2	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
216.1143	-38.10678	0		-2
216.1143	-38.10678	87.16032	0.3234	0
20				

Wire No. 3	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0
20				

Wire No. 6	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0
20				

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6
0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15
0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No. 2	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
216.1143	-38.10678	0	0.3234	-2	2	21
216.1143	-38.10678	4.358016	0.3234	2	2	22
216.1143	-38.10678	8.716032	0.3234	2	2	23
216.1143	-38.10678	13.07405	0.3234	2	2	24
216.1143	-38.10678	17.43206	0.3234	2	2	25
216.1143	-38.10678	21.79008	0.3234	2	2	26
216.1143	-38.10678	26.1481	0.3234	2	2	27

216.1143	-38.10678	30.50611	0.3234	2	2	28
216.1143	-38.10678	34.86413	0.3234	2	2	29
216.1143	-38.10678	39.22215	0.3234	2	2	30
216.1143	-38.10678	43.58016	0.3234	2	2	31
216.1143	-38.10678	47.93818	0.3234	2	2	32
216.1143	-38.10678	52.29619	0.3234	2	2	33
216.1143	-38.10678	56.65421	0.3234	2	2	34
216.1143	-38.10678	61.01223	0.3234	2	2	35
216.1143	-38.10678	65.37025	0.3234	2	2	36
216.1143	-38.10678	69.72826	0.3234	2	2	37
216.1143	-38.10678	74.08627	0.3234	2	2	38
216.1143	-38.10678	78.44429	0.3234	2	2	39
216.1143	-38.10678	82.80231	0.3234	2	0	40

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	
432.2286	-76.21356	81.66905	0.3234	3	0	60	

Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	

671.0327	90.72719	48.8728	0.3234	4	4	72
671.0327	90.72719	53.31578	0.3234	4	4	73
671.0327	90.72719	57.75877	0.3234	4	4	74
671.0327	90.72719	62.20175	0.3234	4	4	75
671.0327	90.72719	66.64473	0.3234	4	4	76
671.0327	90.72719	71.08772	0.3234	4	4	77
671.0327	90.72719	75.53069	0.3234	4	4	78
671.0327	90.72719	79.97368	0.3234	4	4	79
671.0327	90.72719	84.41666	0.3234	4	0	80

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	
455.0163	128.7566	62.10722	0.3234	5	5	95	
455.0163	128.7566	66.54344	0.3234	5	5	96	
455.0163	128.7566	70.97968	0.3234	5	5	97	
455.0163	128.7566	75.41591	0.3234	5	5	98	
455.0163	128.7566	79.85213	0.3234	5	5	99	
455.0163	128.7566	84.28837	0.3234	5	0	100	

Wire No.	6	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
238.7601	167.1816	0	0.3234	-6	6	101	
238.7601	167.1816	4.359141	0.3234	6	6	102	
238.7601	167.1816	8.718283	0.3234	6	6	103	
238.7601	167.1816	13.07743	0.3234	6	6	104	
238.7601	167.1816	17.43657	0.3234	6	6	105	
238.7601	167.1816	21.79571	0.3234	6	6	106	
238.7601	167.1816	26.15485	0.3234	6	6	107	
238.7601	167.1816	30.51399	0.3234	6	6	108	
238.7601	167.1816	34.87313	0.3234	6	6	109	
238.7601	167.1816	39.23228	0.3234	6	6	110	
238.7601	167.1816	43.59142	0.3234	6	6	111	
238.7601	167.1816	47.95055	0.3234	6	6	112	
238.7601	167.1816	52.3097	0.3234	6	6	113	
238.7601	167.1816	56.66884	0.3234	6	6	114	
238.7601	167.1816	61.02798	0.3234	6	6	115	

238.7601	167.1816	65.38712	0.3234	6	6	116
238.7601	167.1816	69.74626	0.3234	6	6	117
238.7601	167.1816	74.10541	0.3234	6	6	118
238.7601	167.1816	78.46455	0.3234	6	6	119
238.7601	167.1816	82.82368	0.3234	6	0	120

Sources: 1

Pulse No., Voltage Magnitude, Phase (Degrees): 81, 100.0, 0.0

Number of Loads: 5

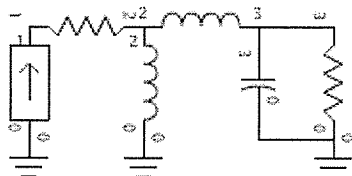
Pulse No., Resistance, Reactance: 1 , 0 ,-10000
Pulse No., Resistance, Reactance: 21 , 0 ,-10000
Pulse No., Resistance, Reactance: 41 , 0 ,-10000
Pulse No., Resistance, Reactance: 61 , 0 ,-10000
Pulse No., Resistance, Reactance: 101 , 0 ,-10000

```
***** SOURCE DATA *****
Pulse 81      Voltage = (100.0, 0.0j)
              Current = (1.247, 1.7088j)
              Impedance = (27.867, -38.186j)
              Power = 62.35 Watts
```

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 36.5162 \angle -39.4874° V
 Node: 2 35.7501 \angle -40.5066° V
 Node: 3 46.6883 \angle -54.3502° V

WCAP PART

CURRENT IN

CURRENT OUT

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	1.00 \angle	0.000° V	1.00 \angle	0.000° A
L	2→0	2920.70000000	35.75 \angle	-40.507° V	0.00 \angle	-130.507° A
L	2→3	3.16000000	14.72 \angle	90.114° V	1.00 \angle	0.114° A
C	3→0	0.00008000	46.69 \angle	-54.350° V	0.02 \angle	35.650° A
R	3→0	27.86700000	46.69 \angle	-54.350° V	0.99 \angle	-0.471° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	28.18 - j	23.221	27.18 - j	23.221
L	2→0	2920.70000000	-0.00 + j	13579.962	0.00 + j	0.000
L	2→3	3.16000000	27.09 - j	23.235	27.09 - j	37.928
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	27.86700000	27.87 - j	38.186	0.00 + j	0.000

WCAP INPUT DATA:

	0.7400	0.00000000	0
I	1.00000000	0	1
R	1.00000000	1	2
L	2920.70000000	2	0
L	3.16000000	2	3
C	0.00008000	3	0
R	27.86700000	3	0

```

*****
                        ACSModel
                    (MININEC 3.1 Core)
                07-27-2014                19:53:56
*****

```

KRMG Tower 6 Calibration Model

Tower 6 driven, all others floating

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
0	0	0		-1
0	0	87.07029	0.3234	0
20				

Wire No. 2	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
216.1143	-38.10678	0		-2
216.1143	-38.10678	87.16032	0.3234	0
20				

Wire No. 3	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				

455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0

20

Wire No. 6 No. of X Segments	Coordinates Y	Z	Radius	End Connection
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0

20

**** ANTENNA GEOMETRY ****

Wire No. 1 Pulse X	Coordinates Y	Z	Radius	Connection		
				End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6
0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15
0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No. 2 Pulse X	Coordinates Y	Z	Radius	Connection		
				End1	End2	No.
216.1143	-38.10678	0	0.3234	-2	2	21
216.1143	-38.10678	4.358016	0.3234	2	2	22
216.1143	-38.10678	8.716032	0.3234	2	2	23
216.1143	-38.10678	13.07405	0.3234	2	2	24
216.1143	-38.10678	17.43206	0.3234	2	2	25
216.1143	-38.10678	21.79008	0.3234	2	2	26
216.1143	-38.10678	26.1481	0.3234	2	2	27
216.1143	-38.10678	30.50611	0.3234	2	2	28
216.1143	-38.10678	34.86413	0.3234	2	2	29
216.1143	-38.10678	39.22215	0.3234	2	2	30
216.1143	-38.10678	43.58016	0.3234	2	2	31

216.1143	-38.10678	47.93818	0.3234	2	2	32
216.1143	-38.10678	52.29619	0.3234	2	2	33
216.1143	-38.10678	56.65421	0.3234	2	2	34
216.1143	-38.10678	61.01223	0.3234	2	2	35
216.1143	-38.10678	65.37025	0.3234	2	2	36
216.1143	-38.10678	69.72826	0.3234	2	2	37
216.1143	-38.10678	74.08627	0.3234	2	2	38
216.1143	-38.10678	78.44429	0.3234	2	2	39
216.1143	-38.10678	82.80231	0.3234	2	0	40

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	
432.2286	-76.21356	81.66905	0.3234	3	0	60	

Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	
671.0327	90.72719	48.8728	0.3234	4	4	72	
671.0327	90.72719	53.31578	0.3234	4	4	73	
671.0327	90.72719	57.75877	0.3234	4	4	74	
671.0327	90.72719	62.20175	0.3234	4	4	75	

671.0327	90.72719	66.64473	0.3234	4	4	76
671.0327	90.72719	71.08772	0.3234	4	4	77
671.0327	90.72719	75.53069	0.3234	4	4	78
671.0327	90.72719	79.97368	0.3234	4	4	79
671.0327	90.72719	84.41666	0.3234	4	0	80

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	
455.0163	128.7566	62.10722	0.3234	5	5	95	
455.0163	128.7566	66.54344	0.3234	5	5	96	
455.0163	128.7566	70.97968	0.3234	5	5	97	
455.0163	128.7566	75.41591	0.3234	5	5	98	
455.0163	128.7566	79.85213	0.3234	5	5	99	
455.0163	128.7566	84.28837	0.3234	5	0	100	

Wire No.	6	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
238.7601	167.1816	0	0.3234	-6	6	101	
238.7601	167.1816	4.359141	0.3234	6	6	102	
238.7601	167.1816	8.718283	0.3234	6	6	103	
238.7601	167.1816	13.07743	0.3234	6	6	104	
238.7601	167.1816	17.43657	0.3234	6	6	105	
238.7601	167.1816	21.79571	0.3234	6	6	106	
238.7601	167.1816	26.15485	0.3234	6	6	107	
238.7601	167.1816	30.51399	0.3234	6	6	108	
238.7601	167.1816	34.87313	0.3234	6	6	109	
238.7601	167.1816	39.23228	0.3234	6	6	110	
238.7601	167.1816	43.59142	0.3234	6	6	111	
238.7601	167.1816	47.95055	0.3234	6	6	112	
238.7601	167.1816	52.3097	0.3234	6	6	113	
238.7601	167.1816	56.66884	0.3234	6	6	114	
238.7601	167.1816	61.02798	0.3234	6	6	115	
238.7601	167.1816	65.38712	0.3234	6	6	116	
238.7601	167.1816	69.74626	0.3234	6	6	117	
238.7601	167.1816	74.10541	0.3234	6	6	118	
238.7601	167.1816	78.46455	0.3234	6	6	119	

238.7601 167.1816 82.82368 0.3234 6 0 120

Sources: 1

Pulse No., Voltage Magnitude, Phase (Degrees): 101, 100.0, 0.0

Number of Loads: 5

Pulse No., Resistance, Reactance: 1 , 0 , -10000

Pulse No., Resistance, Reactance: 21 , 0 , -10000

Pulse No., Resistance, Reactance: 41 , 0 , -10000

Pulse No., Resistance, Reactance: 61 , 0 , -10000

Pulse No., Resistance, Reactance: 81 , 0 , -10000

***** SOURCE DATA *****

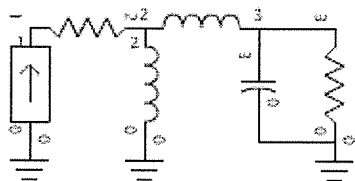
Pulse 101 Voltage = (100.0, 0.0j)
 Current = (0.9521, 1.6532j)
 Impedance = (26.159, -45.423j)
 Power = 47.6 Watts

WCAP - KRMG Tower 6 Calibration Model

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 38.9598 \angle -47.3388° V
 Node: 2 38.2892 \angle -48.4392° V
 Node: 3 51.6526 \angle -60.5037° V

WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
R 1-2	1.00 \angle 0.000° V	1.00 \angle 0.000° A

L	2→0	2920.70000000	38.29 ∠	-48.439° V	0.00 ∠	-138.439° A
L	2→3	3.50000000	16.31 ∠	90.107° V	1.00 ∠	0.107° A
C	3→0	0.00008000	51.65 ∠	-60.504° V	0.02 ∠	29.496° A
R	3→0	26.15900000	51.65 ∠	-60.504° V	0.99 ∠	-0.441° A

	WCAP	PART		FROM IMPEDANCE		TO IMPEDANCE
R	1→2	1.00000000	26.40 - j	28.650	25.40 - j	28.650
L	2→0	2920.70000000	0.01 + j	13579.962	0.00 + j	0.000
L	2→3	3.50000000	25.29 - j	28.637	25.29 - j	44.910
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	26.15900000	26.16 - j	45.423	0.00 + j	0.000

WCAP INPUT DATA:

	0.7400	0.00000000	0	
I	1.00000000	0	1	0.00000000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	3.50000000	2	3	0.00000000
C	0.00008000	3	0	
R	26.15900000	3	0	-45.42300000

Derivation of Operating Parameters for Daytime Directional Antenna

Once calibrated against the measured individual open-circuited base impedances, the moment method model was utilized for day directional antenna calculations. Two sets of calculations were run as described below. These calculations were made to determine the complex voltage source values to be applied at ground level for each driven tower of the array to produce the current moment sums for the towers which, when normalized to the reference tower, equate to the theoretical field parameters of the authorized directional pattern. These voltage sources were then applied in the model and the tower currents were calculated.

Twenty (20) segments were used for each day tower. The KRMG day towers are base sampled, which is permitted for towers for 120 degrees or less. As such, the first (ground) segment of each tower was used to determine the model operating parameters of the array.

The model was initially run with no lumped loads and unused towers (4, 5 and 6) field ratios set to zero. This model run was used to determine the modeled driving point impedance of the

unused towers. A lumped load equal to the conjugate driving point reactance was inserted into the model to de-tune the unused towers in the daytime directional model. The reactance for each so determined is as follows:

Tower 4	589.579j
Tower 5	595.299j
Tower 6	602.922j

The model was then run again to determine the base operating parameters of the daytime array.

A circuit model was constructed to determine the effect of the series feed inductance, shunt choke reactance and the shunt base region capacitance on the ATU output current. The circuit model for each tower in the day array is the same circuit model used for model verification above, substituting the directional mode model-predicted operating impedances for each tower. This model was used with WCAP Professional version 1.1.02. The results are tabulated in the table below along with the base operating parameters for the day array.

As noted previously, the license for KRMG numbers the day towers differently from the night towers. This difference is as follows:

- Night tower 1 = Day tower 3 (pulse 1).
- Night tower 2 = Day tower 1 (pulse 21)
- Night tower 3 = Day tower 2 (pulse 41)

The table shown below identifies the day towers as set forth on the license.

Day Twr.	Pulse	Current Magnitude (amperes)	Current Phase (degrees)	WCAP Current Offset for Unity IBASE	WCAP Phase Offset for Unity ØBASE (degrees)	Antenna Monitor Ratio	Antenna Monitor Phase (degrees)
3	1	31.3323	-3.9347	1.0198	+0.315	.527	-5.7
1	21	59.6441	1.8227	1.0170	+0.295	1.000	0
2	41	31.9486	-8.9267	1.0210	+0.316	.538	-10.7

 ACSModel
 (MININEC 3.1 Core)
 07-27-2014 20:53:17

KRMG Day DA Model

Night tower 4 terminated into 589.6j
 Night tower 5 terminated into 595.3j
 Night tower 6 terminated into 602.9j

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1	Coordinates				End
No. of	X	Y	Z	Radius	Connection
Segments					
0		0	0		-1
0		0	87.07029	0.3234	0
20					

Wire No. 2	Coordinates				End
No. of	X	Y	Z	Radius	Connection
Segments					
216.1143		-38.10678	0		-2
216.1143		-38.10678	87.16032	0.3234	0
20					

Wire No. 3	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0
20				

Wire No. 6	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0
20				

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6
0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15

0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No.	2	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
216.1143	-38.10678	0	0.3234	-2	2	21	
216.1143	-38.10678	4.358016	0.3234	2	2	22	
216.1143	-38.10678	8.716032	0.3234	2	2	23	
216.1143	-38.10678	13.07405	0.3234	2	2	24	
216.1143	-38.10678	17.43206	0.3234	2	2	25	
216.1143	-38.10678	21.79008	0.3234	2	2	26	
216.1143	-38.10678	26.1481	0.3234	2	2	27	
216.1143	-38.10678	30.50611	0.3234	2	2	28	
216.1143	-38.10678	34.86413	0.3234	2	2	29	
216.1143	-38.10678	39.22215	0.3234	2	2	30	
216.1143	-38.10678	43.58016	0.3234	2	2	31	
216.1143	-38.10678	47.93818	0.3234	2	2	32	
216.1143	-38.10678	52.29619	0.3234	2	2	33	
216.1143	-38.10678	56.65421	0.3234	2	2	34	
216.1143	-38.10678	61.01223	0.3234	2	2	35	
216.1143	-38.10678	65.37025	0.3234	2	2	36	
216.1143	-38.10678	69.72826	0.3234	2	2	37	
216.1143	-38.10678	74.08627	0.3234	2	2	38	
216.1143	-38.10678	78.44429	0.3234	2	2	39	
216.1143	-38.10678	82.80231	0.3234	2	0	40	

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	

432.2286	-76.21356	81.66905	0.3234	3	0	60
Wire No. 4 Coordinates Connection						
Pulse						
X	Y	Z	Radius	End1	End2	No.
671.0327	90.72719	0	0.3234	-4	4	61
671.0327	90.72719	4.442982	0.3234	4	4	62
671.0327	90.72719	8.885964	0.3234	4	4	63
671.0327	90.72719	13.32895	0.3234	4	4	64
671.0327	90.72719	17.77193	0.3234	4	4	65
671.0327	90.72719	22.21491	0.3234	4	4	66
671.0327	90.72719	26.65789	0.3234	4	4	67
671.0327	90.72719	31.10088	0.3234	4	4	68
671.0327	90.72719	35.54386	0.3234	4	4	69
671.0327	90.72719	39.98684	0.3234	4	4	70
671.0327	90.72719	44.42982	0.3234	4	4	71
671.0327	90.72719	48.8728	0.3234	4	4	72
671.0327	90.72719	53.31578	0.3234	4	4	73
671.0327	90.72719	57.75877	0.3234	4	4	74
671.0327	90.72719	62.20175	0.3234	4	4	75
671.0327	90.72719	66.64473	0.3234	4	4	76
671.0327	90.72719	71.08772	0.3234	4	4	77
671.0327	90.72719	75.53069	0.3234	4	4	78
671.0327	90.72719	79.97368	0.3234	4	4	79
671.0327	90.72719	84.41666	0.3234	4	0	80
Wire No. 5 Coordinates Connection						
Pulse						
X	Y	Z	Radius	End1	End2	No.
455.0163	128.7566	0	0.3234	-5	5	81
455.0163	128.7566	4.43623	0.3234	5	5	82
455.0163	128.7566	8.872459	0.3234	5	5	83
455.0163	128.7566	13.30869	0.3234	5	5	84
455.0163	128.7566	17.74492	0.3234	5	5	85
455.0163	128.7566	22.18115	0.3234	5	5	86
455.0163	128.7566	26.61738	0.3234	5	5	87
455.0163	128.7566	31.05361	0.3234	5	5	88
455.0163	128.7566	35.48984	0.3234	5	5	89
455.0163	128.7566	39.92607	0.3234	5	5	90
455.0163	128.7566	44.3623	0.3234	5	5	91
455.0163	128.7566	48.79853	0.3234	5	5	92
455.0163	128.7566	53.23475	0.3234	5	5	93
455.0163	128.7566	57.67098	0.3234	5	5	94
455.0163	128.7566	62.10722	0.3234	5	5	95
455.0163	128.7566	66.54344	0.3234	5	5	96
455.0163	128.7566	70.97968	0.3234	5	5	97
455.0163	128.7566	75.41591	0.3234	5	5	98
455.0163	128.7566	79.85213	0.3234	5	5	99
455.0163	128.7566	84.28837	0.3234	5	0	100
Wire No. 6 Coordinates Connection						
Pulse						

X	Y	Z	Radius	End1	End2	No.
238.7601	167.1816	0	0.3234	-6	6	101
238.7601	167.1816	4.359141	0.3234	6	6	102
238.7601	167.1816	8.718283	0.3234	6	6	103
238.7601	167.1816	13.07743	0.3234	6	6	104
238.7601	167.1816	17.43657	0.3234	6	6	105
238.7601	167.1816	21.79571	0.3234	6	6	106
238.7601	167.1816	26.15485	0.3234	6	6	107
238.7601	167.1816	30.51399	0.3234	6	6	108
238.7601	167.1816	34.87313	0.3234	6	6	109
238.7601	167.1816	39.23228	0.3234	6	6	110
238.7601	167.1816	43.59142	0.3234	6	6	111
238.7601	167.1816	47.95055	0.3234	6	6	112
238.7601	167.1816	52.3097	0.3234	6	6	113
238.7601	167.1816	56.66884	0.3234	6	6	114
238.7601	167.1816	61.02798	0.3234	6	6	115
238.7601	167.1816	65.38712	0.3234	6	6	116
238.7601	167.1816	69.74626	0.3234	6	6	117
238.7601	167.1816	74.10541	0.3234	6	6	118
238.7601	167.1816	78.46455	0.3234	6	6	119
238.7601	167.1816	82.82368	0.3234	6	0	120

Sources: 3

Pulse No., Voltage Magnitude, Phase (Degrees): 1, 1939.7, -76.3

Pulse No., Voltage Magnitude, Phase (Degrees): 21, 3320.1, -69.8

Pulse No., Voltage Magnitude, Phase (Degrees): 41, 2127.5, -82.5

Number of Loads: 3

Pulse No., Resistance, Reactance: 61 , 0 , 589.6

Pulse No., Resistance, Reactance: 81 , 0 , 595.3

Pulse No., Resistance, Reactance: 101 , 0 , 602.9

***** SOURCE DATA *****

Pulse 1 Voltage = (459.3733, -1884.4821j)
Current = (31.2585, -2.15j)
Impedance = (18.754, -58.997j)
Power = 9205.5 Watts

Pulse 21 Voltage = (1145.2705, -3116.3178j)
Current = (59.6139, 1.897j)
Impedance = (17.53, -52.833j)
Power = 31181.13 Watts

Pulse 41 Voltage = (277.867, -2109.2942j)
Current = (31.5616, -4.9575j)
Impedance = (18.837, -63.872j)
Power = 9613.37 Watts

Total Power = 49999.999 Watts

***** CURRENT DATA *****

Wire No. 1 : (Day Tower 3)

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
1	31.2585	-2.15	31.3323	-3.9347
2	30.3014	-2.3572	30.393	-4.4482
3	29.5238	-2.4685	29.6268	-4.7793
4	28.6851	-2.5427	28.7976	-5.0657
5	27.7602	-2.5866	27.8804	-5.3234
6	26.7394	-2.6032	26.8658	-5.5604
7	25.6197	-2.5939	25.7507	-5.7813
8	24.401	-2.5599	24.5349	-5.9889
9	23.0848	-2.5018	23.22	-6.1853
10	21.6737	-2.4204	21.8084	-6.3721
11	20.1708	-2.3162	20.3034	-6.5504
12	18.5799	-2.1897	18.7084	-6.7215
13	16.9044	-2.0415	17.0272	-6.886
14	15.1479	-1.8719	15.2631	-7.0447
15	13.3134	-1.6815	13.4192	-7.1984
16	11.4026	-1.4703	11.497	-7.3476
17	9.4148	-1.2383	9.4959	-7.4929
18	7.3447	-0.9846	7.4104	-7.635
19	5.1757	-0.7066	5.2237	-7.7746
20	2.8636	-0.3981	2.8911	-7.9144
E	0.0	0.0	0.0	0.0

Wire No. 2 : (Day Tower 1)

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
21	59.6139	1.897	59.6441	1.8227
22	58.0092	1.3608	58.0252	1.3438
23	56.6589	1.025	56.6681	1.0364
24	55.1655	0.7428	55.1705	0.7714
25	53.4878	0.4982	53.4901	0.5336
26	51.6104	0.2841	51.6112	0.3154
27	49.529	0.0973	49.5291	0.1126
28	47.2441	-0.064	47.2441	-0.0777
29	44.7593	-0.201	44.7598	-0.2573
30	42.08	-0.3142	42.0812	-0.4278
31	39.2124	-0.4041	39.2145	-0.5904
32	36.1638	-0.4709	36.1668	-0.7461
33	32.9412	-0.5149	32.9453	-0.8956
34	29.5518	-0.5363	29.5566	-1.0396
35	26.0011	-0.5351	26.0066	-1.1789
36	22.2926	-0.5113	22.2985	-1.3139
37	18.4251	-0.4649	18.431	-1.4453
38	14.388	-0.3953	14.3935	-1.5736
39	10.1487	-0.3011	10.1532	-1.6996
40	5.6203	-0.1791	5.6231	-1.8255
E	0.0	0.0	0.0	0.0

Wire No. 3 : (Day Tower 2)

Pulse	Real	Imaginary	Magnitude	Phase
-------	------	-----------	-----------	-------

No.	(Amps)	(Amps)	(Amps)	(Degrees)
41	31.5616	-4.9575	31.9486	-8.9267
42	30.507	-5.0721	30.9257	-9.4398
43	29.6708	-5.1095	30.1075	-9.7709
44	28.7842	-5.1054	29.2334	-10.0578
45	27.8189	-5.0638	28.276	-10.3164
46	26.764	-4.9868	27.2246	-10.5546
47	25.6157	-4.8757	26.0756	-10.7768
48	24.3733	-4.7314	24.8283	-10.9858
49	23.038	-4.5549	23.484	-11.1838
50	21.6123	-4.3469	22.0451	-11.3722
51	20.0989	-4.1083	20.5145	-11.5524
52	18.5013	-3.8399	18.8955	-11.7252
53	16.8228	-3.5425	17.1917	-11.8915
54	15.0668	-3.2169	15.4064	-12.0521
55	13.2359	-2.8635	13.5421	-12.2076
56	11.3316	-2.4829	11.6004	-12.3587
57	9.3531	-2.0745	9.5804	-12.5059
58	7.2948	-1.6372	7.4763	-12.6498
59	5.1399	-1.1669	5.2707	-12.7914
60	2.8444	-0.6532	2.9184	-12.9331
E	0.0	0.0	0.0	0.0

Wire No. 4 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
61	-0.2761	-0.1137	0.2986	-157.6182
62	-0.199	-0.082	0.2152	-157.5996
63	-0.1503	-0.0622	0.1627	-157.5203
64	-0.1092	-0.0456	0.1184	-157.3193
65	-0.0734	-0.0314	0.0798	-156.8443
66	-0.0419	-0.019	0.046	-155.5681
67	-0.0142	-0.0083	0.0165	-149.5838
68	0.0099	0.0008	0.0099	4.6396
69	0.0305	0.0085	0.0316	15.5168
70	0.0477	0.0147	0.0499	17.1483
71	0.0614	0.0196	0.0645	17.6745
72	0.0718	0.0231	0.0755	17.8434
73	0.0788	0.0254	0.0828	17.8486
74	0.0824	0.0264	0.0866	17.7623
75	0.0826	0.0262	0.0867	17.6175
76	0.0793	0.0249	0.0831	17.4315
77	0.0724	0.0224	0.0758	17.2138
78	0.0618	0.0189	0.0646	16.9699
79	0.0473	0.0142	0.0494	16.7023
80	0.0283	0.0083	0.0295	16.4081
E	0.0	0.0	0.0	0.0

Wire No. 5 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
81	0.3637	-0.9923	1.0568	-69.8686

82	0.2615	-0.7128	0.7592	-69.8541
83	0.1976	-0.5368	0.572	-69.7919
84	0.1443	-0.3887	0.4146	-69.6336
85	0.0984	-0.2599	0.278	-69.2568
86	0.0587	-0.147	0.1583	-68.2296
87	0.0244	-0.0482	0.054	-63.1407
88	-0.0049	0.0374	0.0377	97.4282
89	-0.0294	0.1103	0.1141	104.9153
90	-0.0493	0.1707	0.1777	106.1067
91	-0.0648	0.2189	0.2283	106.4915
92	-0.076	0.2549	0.266	106.6107
93	-0.0831	0.2787	0.2908	106.6068
94	-0.0862	0.2905	0.303	106.5338
95	-0.0855	0.2901	0.3024	106.4162
96	-0.081	0.2776	0.2891	106.2672
97	-0.0729	0.2527	0.263	106.0938
98	-0.0613	0.2152	0.2238	105.9003
99	-0.0461	0.1642	0.1705	105.6885
100	-0.027	0.0978	0.1015	105.4562
E	0.0	0.0	0.0	0.0

Wire No. 6 :

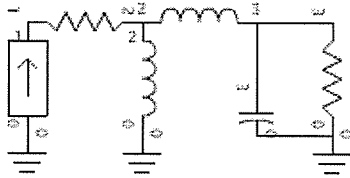
Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
101	0.7561	-1.3355	1.5347	-60.4855
102	0.5428	-0.9583	1.1013	-60.4712
103	0.4097	-0.7215	0.8298	-60.4098
104	0.2984	-0.5222	0.6014	-60.2536
105	0.2024	-0.3489	0.4033	-59.8818
106	0.1189	-0.1968	0.2299	-58.8694
107	0.0464	-0.0636	0.0787	-53.878
108	-0.0157	0.0519	0.0542	106.8394
109	-0.068	0.1503	0.165	114.3427
110	-0.1108	0.2321	0.2572	115.5282
111	-0.1445	0.2974	0.3306	115.9107
112	-0.1691	0.3463	0.3854	116.0294
113	-0.185	0.3789	0.4216	116.026
114	-0.1923	0.3952	0.4395	115.9539
115	-0.1913	0.395	0.4389	115.8378
116	-0.182	0.3784	0.4199	115.6905
117	-0.1647	0.3449	0.3822	115.5191
118	-0.1392	0.2941	0.3254	115.3278
119	-0.1054	0.2248	0.2483	115.1185
120	-0.0622	0.1342	0.1479	114.8888
E	0.0	0.0	0.0	0.0

WCAP - KRMG DA Pulse 1 (Day Tower 3)

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node:	1	1111.9586	∠	-60.4623°	V
Node:	2	1094.8093	∠	-61.8624°	V
Node:	3	1939.6970	∠	-76.3002°	V

	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	31.95	∠ -3.620°	V	31.95 ∠ -3.620° A
L	2→0	2920.70000000	1094.81	∠ -61.862°	V	0.08 ∠ -151.862° A
L	2→3	6.18500000	920.85	∠ 86.456°	V	32.02 ∠ -3.544° A
C	3→0	0.00008000	1939.70	∠ -76.300°	V	0.72 ∠ 13.700° A
R	3→0	18.75400000	1939.70	∠ -76.300°	V	31.33 ∠ -3.935° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	19.03 - j	29.134	18.03 - j	29.134
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	6.18500000	17.96 - j	29.095	17.96 - j	57.853
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	18.75400000	18.75 - j	58.997	0.00 + j	0.000

WCAP INPUT DATA:

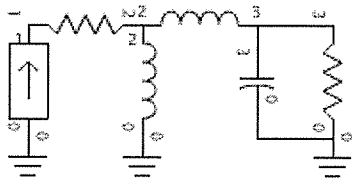
	0.7400	0.00000000	0	
I	31.95268000	0	1	-3.61950000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	6.18500000	2	3	0.00000000
C	0.00008000	3	0	
R	18.75400000	3	0	-58.99700000

WCAP - KRMG Pulse 21 DA Daytime (Day Tower 1)

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 2419.8939 \angle -61.1444° V
Node: 2 2393.2165 \angle -62.4415° V
Node: 3 3320.0920 \angle -69.8215° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	60.66 \angle	2.118° V	60.66 \angle	2.118° A
L	2→0	2920.70000000	2393.22 \angle	-62.441° V	0.18 \angle	-152.441° A
L	2→3	3.51000000	995.36 \angle	92.189° V	60.82 \angle	2.189° A
C	3→0	0.00008000	3320.09 \angle	-69.822° V	1.23 \angle	20.178° A
R	3→0	17.53000000	3320.09 \angle	-69.822° V	59.64 \angle	1.823° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	17.95 - j	35.628	16.95 - j	35.628
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	3.51000000	16.86 - j	35.556	16.86 - j	51.923
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	17.53000000	17.53 - j	52.833	0.00 + j	0.000

WCAP INPUT DATA:

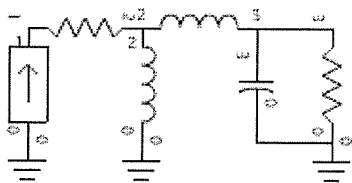
	0.7400	0.00000000	0	
I	60.65800000	0	1	2.11770000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	3.51000000	2	3	0.00000000
C	0.00008000	3	0	
R	17.53000000	3	0	-52.83300000

WCAP - KRMG Pulse 41 DA Daytime (Day Tower 2)

Center Frequency: 0.74 MHz

Frequency Range: ±0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 1361.0058 ∠ -71.4129° V

Node: 2 1346.4092 \angle -72.6476° V

Node: 3 2127.5313 \angle -82.4951° V

	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	32.62 \angle	-8.611° V	32.62 \angle	-8.611° A
L	2→0	2920.70000000	1346.41 \angle	-72.648° V	0.10 \angle	-162.648° A
L	2→3	5.48000000	833.40 \angle	81.465° V	32.71 \angle	-8.535° A
C	3→0	0.00008000	2127.53 \angle	-82.495° V	0.79 \angle	7.505° A
R	3→0	18.83700000	2127.53 \angle	-82.495° V	31.95 \angle	-8.927° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	19.07 - j	37.110	18.07 - j	37.110
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	5.48000000	17.97 - j	37.033	17.97 - j	62.513
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	18.83700000	18.84 - j	63.872	0.00 + j	0.000

WCAP INPUT DATA:

	0.7400	0.00000000	0	
I	32.61950000	0	1	-8.61070000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	5.48000000	2	3	0.00000000
C	0.00008000	3	0	
R	18.83700000	3	0	-63.87200000

Derivation of Night Operating Parameters

The KRMG night array uses 6 towers. All six have been shown in the calibration models, above.

As with the day model, 20 segments were used for each tower. The KRMG towers are base sampled, which is permitted for towers of 120 electrical degrees or less. Therefore, the first (ground) segment of each tower was used to determine the model operating parameters of the array. Because all towers are used in this array, no lumped loads were utilized in the night directional model.

A circuit model was constructed for each tower to determine the effect of series fed inductance, shunt static drain choke reactance, and shunt base region capacitance on the ATU output current. The circuit model used for each tower is the same circuit model used for model verification, as set forth above, except substituting the directional mode model-predicted operating impedance for each tower. Again, this model was used with WCAP Professional version 1.1.02. The results are tabulated below, along with the base operating parameters for the night array.

Night Twr.	Pulse	Current Magnitude (amperes)	Current Phase (degrees)	WCAP Current Offset for Unity IBASE	WCAP Phase Offset for Unity ØBASE (degrees)	Antenna Monitor Ratio	Antenna Monitor Phase (degrees)
1	1	20.022	-15.534	1.0179	+0.367	.641	-16.5
2	21	31.3194	1.107	1.0149	+0.181	1	0
3	41	16.1423	14.604	1.0141	+0.071	.515	13.25
4	61	15.0086	-45.723	1.0166	+0.206	.480	-46.8
5	81	30.9795	-59.874	1.0175	+0.340	.992	-60.8
6	101	20.1406	-73.441	1.0252	+0.398	.650	-74.3

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*****
                        ACSModel
                    (MININEC 3.1 Core)
                07-29-2014      19:06:44
*****

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KRMG Night DA Model

Frequency = 0.740 MHz Wavelength = 405.13513 Meters

No. of Wires: 6

Wire No. 1 No. of X Segments	Coordinates Y	Z	Radius	End Connection
0	0	0		-1
0	0	87.07029	0.3234	0
20				

Wire No. 2 No. of X Segments	Coordinates Y	Z	Radius	End Connection
216.1143	-38.10678	0		-2
216.1143	-38.10678	87.16032	0.3234	0
20				

Wire No. 3 No. of X Segments	Coordinates Y	Z	Radius	End Connection
432.2286	-76.21356	0		-3
432.2286	-76.21356	85.96742	0.3234	0
20				

Wire No. 4 No. of X Segments	Coordinates Y	Z	Radius	End Connection
671.0327	90.72719	0		-4
671.0327	90.72719	88.85964	0.3234	0
20				

Wire No. 5 No. of	Coordinates	End
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X	Y	Z	Radius	Connection
Segments				
455.0163	128.7566	0		-5
455.0163	128.7566	88.72459	0.3234	0
20				

Wire No. 6	Coordinates			End
No. of				
X	Y	Z	Radius	Connection
Segments				
238.7601	167.1816	0		-6
238.7601	167.1816	87.18283	0.3234	0
20				

**** ANTENNA GEOMETRY ****

Wire No. 1	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
0	0	0	0.3234	-1	1	1
0	0	4.353515	0.3234	1	1	2
0	0	8.707029	0.3234	1	1	3
0	0	13.06054	0.3234	1	1	4
0	0	17.41406	0.3234	1	1	5
0	0	21.76757	0.3234	1	1	6
0	0	26.12109	0.3234	1	1	7
0	0	30.4746	0.3234	1	1	8
0	0	34.82812	0.3234	1	1	9
0	0	39.18163	0.3234	1	1	10
0	0	43.53514	0.3234	1	1	11
0	0	47.88866	0.3234	1	1	12
0	0	52.24218	0.3234	1	1	13
0	0	56.59569	0.3234	1	1	14
0	0	60.9492	0.3234	1	1	15
0	0	65.30272	0.3234	1	1	16
0	0	69.65623	0.3234	1	1	17
0	0	74.00975	0.3234	1	1	18
0	0	78.36327	0.3234	1	1	19
0	0	82.71677	0.3234	1	0	20

Wire No. 2	Coordinates			Connection		
Pulse						
X	Y	Z	Radius	End1	End2	No.
216.1143	-38.10678	0	0.3234	-2	2	21
216.1143	-38.10678	4.358016	0.3234	2	2	22
216.1143	-38.10678	8.716032	0.3234	2	2	23
216.1143	-38.10678	13.07405	0.3234	2	2	24
216.1143	-38.10678	17.43206	0.3234	2	2	25
216.1143	-38.10678	21.79008	0.3234	2	2	26
216.1143	-38.10678	26.1481	0.3234	2	2	27
216.1143	-38.10678	30.50611	0.3234	2	2	28
216.1143	-38.10678	34.86413	0.3234	2	2	29

216.1143	-38.10678	39.22215	0.3234	2	2	30
216.1143	-38.10678	43.58016	0.3234	2	2	31
216.1143	-38.10678	47.93818	0.3234	2	2	32
216.1143	-38.10678	52.29619	0.3234	2	2	33
216.1143	-38.10678	56.65421	0.3234	2	2	34
216.1143	-38.10678	61.01223	0.3234	2	2	35
216.1143	-38.10678	65.37025	0.3234	2	2	36
216.1143	-38.10678	69.72826	0.3234	2	2	37
216.1143	-38.10678	74.08627	0.3234	2	2	38
216.1143	-38.10678	78.44429	0.3234	2	2	39
216.1143	-38.10678	82.80231	0.3234	2	0	40

Wire No.	3	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
432.2286	-76.21356	0	0.3234	-3	3	41	
432.2286	-76.21356	4.298371	0.3234	3	3	42	
432.2286	-76.21356	8.596743	0.3234	3	3	43	
432.2286	-76.21356	12.89511	0.3234	3	3	44	
432.2286	-76.21356	17.19349	0.3234	3	3	45	
432.2286	-76.21356	21.49186	0.3234	3	3	46	
432.2286	-76.21356	25.79023	0.3234	3	3	47	
432.2286	-76.21356	30.0886	0.3234	3	3	48	
432.2286	-76.21356	34.38697	0.3234	3	3	49	
432.2286	-76.21356	38.68534	0.3234	3	3	50	
432.2286	-76.21356	42.98371	0.3234	3	3	51	
432.2286	-76.21356	47.28208	0.3234	3	3	52	
432.2286	-76.21356	51.58046	0.3234	3	3	53	
432.2286	-76.21356	55.87883	0.3234	3	3	54	
432.2286	-76.21356	60.1772	0.3234	3	3	55	
432.2286	-76.21356	64.47557	0.3234	3	3	56	
432.2286	-76.21356	68.77394	0.3234	3	3	57	
432.2286	-76.21356	73.07231	0.3234	3	3	58	
432.2286	-76.21356	77.37068	0.3234	3	3	59	
432.2286	-76.21356	81.66905	0.3234	3	0	60	

Wire No.	4	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
671.0327	90.72719	0	0.3234	-4	4	61	
671.0327	90.72719	4.442982	0.3234	4	4	62	
671.0327	90.72719	8.885964	0.3234	4	4	63	
671.0327	90.72719	13.32895	0.3234	4	4	64	
671.0327	90.72719	17.77193	0.3234	4	4	65	
671.0327	90.72719	22.21491	0.3234	4	4	66	
671.0327	90.72719	26.65789	0.3234	4	4	67	
671.0327	90.72719	31.10088	0.3234	4	4	68	
671.0327	90.72719	35.54386	0.3234	4	4	69	
671.0327	90.72719	39.98684	0.3234	4	4	70	
671.0327	90.72719	44.42982	0.3234	4	4	71	
671.0327	90.72719	48.8728	0.3234	4	4	72	
671.0327	90.72719	53.31578	0.3234	4	4	73	

671.0327	90.72719	57.75877	0.3234	4	4	74
671.0327	90.72719	62.20175	0.3234	4	4	75
671.0327	90.72719	66.64473	0.3234	4	4	76
671.0327	90.72719	71.08772	0.3234	4	4	77
671.0327	90.72719	75.53069	0.3234	4	4	78
671.0327	90.72719	79.97368	0.3234	4	4	79
671.0327	90.72719	84.41666	0.3234	4	0	80

Wire No.	5	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
455.0163	128.7566	0	0.3234	-5	5	81	
455.0163	128.7566	4.43623	0.3234	5	5	82	
455.0163	128.7566	8.872459	0.3234	5	5	83	
455.0163	128.7566	13.30869	0.3234	5	5	84	
455.0163	128.7566	17.74492	0.3234	5	5	85	
455.0163	128.7566	22.18115	0.3234	5	5	86	
455.0163	128.7566	26.61738	0.3234	5	5	87	
455.0163	128.7566	31.05361	0.3234	5	5	88	
455.0163	128.7566	35.48984	0.3234	5	5	89	
455.0163	128.7566	39.92607	0.3234	5	5	90	
455.0163	128.7566	44.3623	0.3234	5	5	91	
455.0163	128.7566	48.79853	0.3234	5	5	92	
455.0163	128.7566	53.23475	0.3234	5	5	93	
455.0163	128.7566	57.67098	0.3234	5	5	94	
455.0163	128.7566	62.10722	0.3234	5	5	95	
455.0163	128.7566	66.54344	0.3234	5	5	96	
455.0163	128.7566	70.97968	0.3234	5	5	97	
455.0163	128.7566	75.41591	0.3234	5	5	98	
455.0163	128.7566	79.85213	0.3234	5	5	99	
455.0163	128.7566	84.28837	0.3234	5	0	100	

Wire No.	6	Coordinates			Connection		
Pulse							
X	Y	Z	Radius	End1	End2	No.	
238.7601	167.1816	0	0.3234	-6	6	101	
238.7601	167.1816	4.359141	0.3234	6	6	102	
238.7601	167.1816	8.718283	0.3234	6	6	103	
238.7601	167.1816	13.07743	0.3234	6	6	104	
238.7601	167.1816	17.43657	0.3234	6	6	105	
238.7601	167.1816	21.79571	0.3234	6	6	106	
238.7601	167.1816	26.15485	0.3234	6	6	107	
238.7601	167.1816	30.51399	0.3234	6	6	108	
238.7601	167.1816	34.87313	0.3234	6	6	109	
238.7601	167.1816	39.23228	0.3234	6	6	110	
238.7601	167.1816	43.59142	0.3234	6	6	111	
238.7601	167.1816	47.95055	0.3234	6	6	112	
238.7601	167.1816	52.3097	0.3234	6	6	113	
238.7601	167.1816	56.66884	0.3234	6	6	114	
238.7601	167.1816	61.02798	0.3234	6	6	115	
238.7601	167.1816	65.38712	0.3234	6	6	116	
238.7601	167.1816	69.74626	0.3234	6	6	117	

238.7601	167.1816	74.10541	0.3234	6	6	118
238.7601	167.1816	78.46455	0.3234	6	6	119
238.7601	167.1816	82.82368	0.3234	6	0	120

Sources: 6

Pulse No., Voltage Magnitude, Phase (Degrees): 1, 1145.8, -83.1
Pulse No., Voltage Magnitude, Phase (Degrees): 21, 1477.4, -75.8
Pulse No., Voltage Magnitude, Phase (Degrees): 41, 664.6, -81.3
Pulse No., Voltage Magnitude, Phase (Degrees): 61, 766.4, -121.9
Pulse No., Voltage Magnitude, Phase (Degrees): 81, 1815.6, -129.7
Pulse No., Voltage Magnitude, Phase (Degrees): 101, 1684.3, -146.9

Number of Loads: 0

***** SOURCE DATA *****

Pulse 1 Voltage = (136.823, -1137.5539j)
Current = (19.2906, -5.3622j)
Impedance = (21.8, -52.91j)
Power = 4369.59 Watts

Pulse 21 Voltage = (363.4076, -1432.0212j)
Current = (31.3135, 0.605j)
Impedance = (10.718, -45.939j)
Power = 5256.56 Watts

Pulse 41 Voltage = (100.746, -656.8971j)
Current = (15.6208, 4.07j)
Impedance = (-4.221, -40.953j)
Power = -549.931246 Watts

Pulse 61 Voltage = (-405.0096, -650.624j)
Current = (10.4778, -10.7458j)
Impedance = (12.199, -49.585j)
Power = 1373.94 Watts

Pulse 81 Voltage = (-1158.8849, -1397.6141j)
Current = (15.5483, -26.7951j)
Impedance = (20.246, -54.998j)
Power = 9715.25 Watts

Pulse 101 Voltage = (-1410.6145, -920.275j)
Current = (5.7401, -19.3053j)
Impedance = (23.837, -80.156j)
Power = 4834.59 Watts

Total Power = 25000.001 Watts

CURRENT DATA

Wire No. 1 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
1	19.2906	-5.3622	20.022	-15.5343
2	18.7117	-5.4113	19.4785	-16.1295
3	18.2389	-5.4067	19.0234	-16.5118
4	17.727	-5.3661	18.5214	-16.8414
5	17.1608	-5.2916	17.9581	-17.1375
6	16.5345	-5.1846	17.3283	-17.4093
7	15.8464	-5.0457	16.6303	-17.6623
8	15.0963	-4.8759	15.8642	-17.8997
9	14.2854	-4.6758	15.0311	-18.1242
10	13.4151	-4.4464	14.1328	-18.3375
11	12.4875	-4.1883	13.1712	-18.5412
12	11.5049	-3.9023	12.1487	-18.7365
13	10.4694	-3.5894	11.0676	-18.9243
14	9.3833	-3.2503	9.9303	-19.1057
15	8.2483	-2.8855	8.7385	-19.2813
16	7.0657	-2.4954	7.4934	-19.452
17	5.8349	-2.0798	6.1945	-19.6184
18	4.5527	-1.6374	4.8381	-19.7813
19	3.2087	-1.1642	3.4133	-19.9416
20	1.7755	-0.6498	1.8907	-20.1024
E	0.0	0.0	0.0	0.0

Wire No. 2 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
21	31.3135	0.605	31.3194	1.1069
22	30.5657	0.4348	30.5688	0.815
23	29.914	0.3281	29.9158	0.6283
24	29.176	0.2382	29.177	0.4678
25	28.3328	0.1602	28.3332	0.3239
26	27.3776	0.0917	27.3777	0.1919
27	26.3087	0.0318	26.3087	0.0693
28	25.1268	-0.0201	25.1268	-0.0457
29	23.8339	-0.0642	23.834	-0.1545
30	22.433	-0.1009	22.4332	-0.2577
31	20.9274	-0.1302	20.9278	-0.3564
32	19.321	-0.1521	19.3216	-0.451
33	17.6175	-0.1667	17.6183	-0.542
34	15.8207	-0.1739	15.8217	-0.6299
35	13.9336	-0.1739	13.9346	-0.7152
36	11.9578	-0.1666	11.959	-0.7981
37	9.8927	-0.1518	9.8939	-0.879
38	7.7324	-0.1293	7.7335	-0.9582
39	5.4592	-0.0988	5.4601	-1.0364
40	3.0261	-0.0589	3.0267	-1.1148
E	0.0	0.0	0.0	0.0

Wire No. 3 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
41	15.6208	4.07	16.1423	14.6039
42	15.277	4.0128	15.7953	14.7173
43	14.9709	3.9522	15.4838	14.7885
44	14.6186	3.8757	15.1237	14.8485
45	14.2118	3.7818	14.7064	14.9012
46	13.7474	3.6703	14.2289	14.9483
47	13.2245	3.5413	13.6904	14.991
48	12.6435	3.3949	13.0914	15.0297
49	12.0055	3.2315	12.4328	15.0652
50	11.3117	3.0516	11.7161	15.0976
51	10.5638	2.8557	10.9429	15.1272
52	9.7635	2.6443	10.1152	15.1544
53	8.9126	2.418	9.2348	15.1792
54	8.0128	2.1773	8.3033	15.2019
55	7.0653	1.9226	7.3222	15.2225
56	6.0709	1.6541	6.2923	15.2412
57	5.029	1.3718	5.2127	15.2581
58	3.9362	1.0749	4.0803	15.2732
59	2.7833	0.7607	2.8853	15.2867
60	1.5457	0.4228	1.6025	15.2987
E	0.0	0.0	0.0	0.0

Wire No. 4 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
61	10.4778	-10.7458	15.0086	-45.7235
62	10.1446	-10.527	14.6195	-46.0599
63	9.8753	-10.3253	14.2875	-46.2763
64	9.5867	-10.0891	13.9174	-46.4626
65	9.2701	-9.813	13.4992	-46.6297
66	8.9221	-9.4954	13.0295	-46.783
67	8.5417	-9.136	12.5071	-46.9253
68	8.1289	-8.7351	11.9324	-47.0588
69	7.6842	-8.2937	11.3063	-47.1846
70	7.2085	-7.8129	10.6304	-47.3041
71	6.7031	-7.2941	9.9063	-47.4178
72	6.169	-6.7386	9.1359	-47.5267
73	5.6077	-6.1479	8.3212	-47.6311
74	5.0204	-5.5235	7.4641	-47.7317
75	4.4081	-4.8664	6.5661	-47.8288
76	3.7716	-4.1775	5.6282	-47.9229
77	3.1108	-3.4566	4.6503	-48.0143
78	2.424	-2.7019	3.6298	-48.1035
79	1.7058	-1.9073	2.5588	-48.191
80	0.9421	-1.0566	1.4156	-48.2783
E	0.0	0.0	0.0	0.0

Wire No. 5 :

Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
81	15.5483	-26.7951	30.9795	-59.8748
82	14.8518	-26.18	30.0993	-60.434
83	14.3299	-25.6348	29.3682	-60.7947
84	13.8038	-25.0117	28.568	-61.1059
85	13.2543	-24.2954	27.6757	-61.3854
86	12.6738	-23.4806	26.6826	-61.6418
87	12.0592	-22.5662	25.5863	-61.8802
88	11.41	-21.553	24.3868	-62.1037
89	10.7263	-20.4431	23.0862	-62.3145
90	10.0092	-19.2392	21.6871	-62.5144
91	9.2601	-17.9447	20.1931	-62.7048
92	8.4806	-16.5631	18.6079	-62.8867
93	7.6725	-15.0979	16.9356	-63.0612
94	6.8374	-13.5527	15.1798	-63.2289
95	5.9767	-11.9304	13.3438	-63.3907
96	5.0915	-10.233	11.4297	-63.5472
97	4.1815	-8.4603	9.4372	-63.699
98	3.2447	-6.6077	7.3613	-63.8468
99	2.274	-4.6607	5.1859	-63.9914
100	1.2507	-2.5798	2.867	-64.1354
E	0.0	0.0	0.0	0.0

Wire No. 6 :

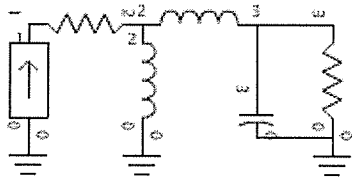
Pulse No.	Real (Amps)	Imaginary (Amps)	Magnitude (Amps)	Phase (Degrees)
101	5.7401	-19.3053	20.1406	-73.4412
102	5.298	-18.5993	19.3391	-74.1005
103	4.9946	-18.0492	18.7275	-74.532
104	4.7123	-17.4749	18.0991	-74.9085
105	4.4382	-16.8574	17.4318	-75.25
106	4.1669	-16.1893	16.7169	-75.566
107	3.8962	-15.4679	15.951	-75.8619
108	3.6249	-14.6927	15.1333	-76.141
109	3.3527	-13.8646	14.2642	-76.4058
110	3.0796	-12.985	13.3451	-76.6581
111	2.8056	-12.0557	12.3778	-76.8993
112	2.5312	-11.0789	11.3644	-77.1307
113	2.2566	-10.0569	10.3069	-77.3532
114	1.9823	-8.9917	9.2077	-77.5676
115	1.7085	-7.8854	8.0683	-77.7748
116	1.4354	-6.7389	6.8901	-77.9754
117	1.1629	-5.5521	5.6726	-78.1702
118	0.8903	-4.322	4.4127	-78.3598
119	0.6158	-3.039	3.1007	-78.5453
120	0.3343	-1.6776	1.7106	-78.73
E	0.0	0.0	0.0	0.0

WCAP - KRMG DA Tower 1 Night

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 653.6967 \angle -61.7693° V
Node: 2 639.8655 \angle -63.0955° V
Node: 3 1145.6875 \angle -83.1417° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	20.38 \angle	-15.167° V	20.38 \angle	-15.167° A
L	2→0	2920.70000000	639.87 \angle	-63.095° V	0.05 \angle	-153.095° A
L	2→3	6.18500000	587.10 \angle	74.921° V	20.42 \angle	-15.079° A
C	3→0	0.00008000	1145.69 \angle	-83.142° V	0.43 \angle	6.858° A
R	3→0	21.80000000	1145.69 \angle	-83.142° V	20.02 \angle	-15.534° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	22.04 - j	23.306	21.04 - j	23.306
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	6.18500000	20.97 - j	23.298	20.97 - j	52.056
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	21.80000000	21.80 - j	52.910	0.00 + j	0.000

WCAP INPUT DATA:

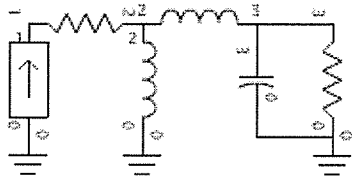
	0.7400	0.00000000	0	
I	20.38039380	0	1	-15.16730000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	6.18500000	2	3	0.00000000
C	0.00008000	3	0	
R	21.80000000	3	0	-52.91000000

WCAP - KRMG DA Tower 2 Night

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 987.4064 \angle -67.1728° V

Node: 2 976.1843 \angle -68.9084° V

Node: 3 1477.3699 \angle -75.7602° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	31.79 \angle	1.288° V	31.79 \angle	1.288° A
L	2→0	2920.70000000	976.18 \angle	-68.908° V	0.07 \angle	-158.908° A
L	2→3	3.51000000	521.33 \angle	91.332° V	31.85 \angle	1.332° A
C	3→0	0.00008000	1477.37 \angle	-75.760° V	0.55 \angle	14.240° A
R	3→0	10.71800000	1477.37 \angle	-75.760° V	31.32 \angle	1.107° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	11.40 - j	28.895	10.40 - j	28.895
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	3.51000000	10.36 - j	28.841	10.36 - j	45.208

C	3→0	0.00008000	-0.00 - j	2688.428	0.00 + j	0.000
R	3→0	10.71800000	10.72 - j	45.939	0.00 + j	0.000

WCAP INPUT DATA:

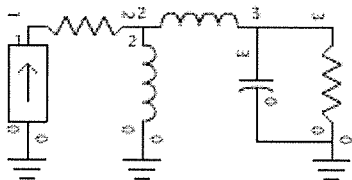
	0.7400	0.00000000	0	
I	31.78605900	0	1	1.28790000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	3.51000000	2	3	0.00000000
C	0.00008000	3	0	
R	10.71800000	3	0	-45.93900000

WCAP - KRMG DA Tower 3 Night

Center Frequency: 0.74 MHz

Frequency Range: ±0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node:	1	248.8338	∠	-87.2508°	V
Node:	2	252.6854	∠	-90.8869°	V
Node:	3	664.5628	∠	-81.2804°	V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	16.37 \angle	14.533° V	16.37 \angle	14.533° A
L	2→0	2920.70000000	252.69 \angle	-90.887° V	0.02 \angle	179.113° A
L	2→3	5.48000000	417.56 \angle	104.516° V	16.39 \angle	14.516° A
C	3→0	0.00008000	664.56 \angle	-81.280° V	0.25 \angle	8.720° A
R	3→0	-4.22100000	664.56 \angle	-81.280° V	16.14 \angle	14.604° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	-3.10 - j	14.880	-4.10 - j	14.880
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000
L	2→3	5.48000000	-4.10 - j	14.865	-4.10 - j	40.345
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	-4.22100000	-4.22 - j	40.953	0.00 + j	0.000

WCAP INPUT DATA:

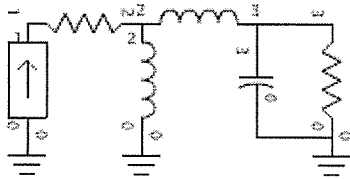
	0.7400	0.00000000	0	
I	16.36991000	0	1	14.53290000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	5.48000000	2	3	0.00000000
C	0.00008000	3	0	
R	-4.22100000	3	0	-40.95300000

WCAP - KRMG DA Tower 4 Night

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 434.4987 \angle -108.7958° V
Node: 2 427.8550 \angle -110.6211° V
Node: 3 766.4285 \angle -121.9015° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	15.26 \angle	-45.517° V	15.26 \angle	-45.517° A
L	2→0	2920.70000000	427.86 \angle	-110.621° V	0.03 \angle	159.379° A
L	2→3	5.02000000	356.79 \angle	44.532° V	15.29 \angle	-45.468° A
C	3→0	0.00008000	766.43 \angle	-121.902° V	0.29 \angle	-31.902° A
R	3→0	12.19900000	766.43 \angle	-121.902° V	15.01 \angle	-45.723° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	12.81 - j	25.436	11.81 - j	25.436
L	2→0	2920.70000000	0.00 + j	13579.962	0.00 + j	0.000

L	2→3	5.02000000	11.76 - j	25.399	11.76 - j	48.739
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	12.19900000	12.20 - j	49.585	0.00 + j	0.000

WCAP INPUT DATA:

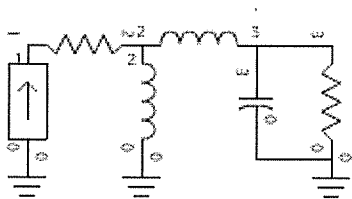
	0.7400	0.00000000	0	
I	15.25770000	0	1	-45.51750000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	5.02000000	2	3	0.00000000
C	0.00008000	3	0	
R	12.19900000	3	0	-49.58500000

WCAP - KRMG DA Tower 5 Night

Center Frequency: 0.74 MHz

Frequency Range: ±0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node:	1	1401.7059 ∠ -122.0028° V
Node:	2	1387.4174 ∠ -123.1572° V
Node:	3	1815.5343 ∠ -129.6646° V

WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	1→2	1.00000000	31.52 \angle	-59.534° V	31.52 \angle	-59.534° A
L	2→0	2920.70000000	1387.42 \angle	-123.157° V	0.10 \angle	146.843° A
L	2→3	3.16000000	464.48 \angle	30.548° V	31.61 \angle	-59.452° A
C	3→0	0.00008000	1815.53 \angle	-129.665° V	0.68 \angle	-39.665° A
R	3→0	20.24600000	1815.53 \angle	-129.665° V	30.98 \angle	-59.874° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	1→2	1.00000000	20.55 - j	39.433	19.55 - j	39.433
L	2→0	2920.70000000	-0.01 + j	13579.962	0.00 + j	0.000
L	2→3	3.16000000	19.44 - j	39.346	19.44 - j	54.039
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	20.24600000	20.25 - j	54.998	0.00 + j	0.000

WCAP INPUT DATA:

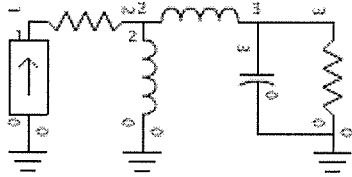
	0.7400	0.00000000	0	
I	31.52160000	0	1	-59.53380000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	3.16000000	2	3	0.00000000
C	0.00008000	3	0	
R	20.24600000	3	0	-54.99800000

WCAP - KRMG DA Tower 6 Night

Center Frequency: 0.74 MHz

Frequency Range: ± 0 kHz

Frequency Step: 0 kHz



WCAP OUTPUT AT FREQUENCY: 0.740 MHz

NODE VOLTAGES

Node: 1 1370.3798 \angle -142.1389° V

Node: 2 1363.1489 \angle -142.9496° V

Node: 3 1684.3066 \angle -146.8797° V

	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT
R	1→2	1.00000000	20.65 \angle -73.043° V	20.65 \angle -73.043° A	
L	2→0	2920.70000000	1363.15 \angle -142.950° V	0.10 \angle 127.050° A	
L	2→3	3.50000000	337.55 \angle 17.052° V	20.74 \angle -72.948° A	
C	3→0	0.00008000	1684.31 \angle -146.880° V	0.63 \angle -56.880° A	
R	3→0	23.83700000	1684.31 \angle -146.880° V	20.14 \angle -73.441° A	

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE
R	1→2	1.00000000	23.68 - j 62.000	22.68 - j 62.000	
L	2→0	2920.70000000	-0.01 + j 13579.962	0.00 + j 0.000	

L	2→3	3.50000000	22.48 - j	61.755	22.48 - j	78.029
C	3→0	0.00008000	0.00 - j	2688.428	0.00 + j	0.000
R	3→0	23.83700000	23.84 - j	80.156	0.00 + j	0.000

WCAP INPUT DATA:

	0.7400	0.00000000	0	
I	20.64810000	0	1	-73.04320000
R	1.00000000	1	2	0.00000000
L	2920.70000000	2	0	0.00000000
L	3.50000000	2	3	0.00000000
C	0.00008000	3	0	
R	23.83700000	3	0	-80.15600000

Sampling System

The sampling system consists of Delta Electronics TCT-1 current transformers installed at the output of each antenna tuning unit. Samples from the current transformers are fed to the antenna monitor via equal lengths of Andrew 3/8 inch foam-dielectric coaxial transmission lines. The antenna monitor is a Potomac Instruments type AM-1901 which was factory calibrated on September 10, 2014.

Impedance measurements were made of the antenna sampling system using a Power Aim 120 network analyzer. The measurements were made looking into the antenna monitor ends of the sample lines with the tower ends of the sample lines open-circuited.

The table below shows the frequencies above and below the carrier frequency where resonance, defined as zero reactance corresponding with low resistance was found. As the length of distortionless transmission line is 180 electrical degrees at the different frequency between adjacent frequencies of resonance, and the frequencies of resonance occur at odd multiples of 90 degrees electrical length, the sample line length at the resonate carrier frequency, was found to be 270 electrical degrees. The electrical length at the carrier frequency in the table shown below was calculated by ratioing the frequencies. (Note, the night tower designations are used in the following table.)

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Twr.	Sample Line Open-Circuited Resonance Below 740 kHz (kHz)	Sample Line Open-Circuited Resonance Above 740 kHz (kHz)	Sample Line Calculated Electrical Length at 740 kHz (deg.)
1	488.9	1470.7 315kHz	135.8
2	490.0	1470.5	135.9
3	484.2	1462.5	136.4
4	488.2	1466.3	136.3
5	486.9	1464.7	136.4
6	491.0	1476.0	135.6

Because the electrical lengths were determined to be identical to within .8 degrees, the sample lines meet the requirement of the Rules that they be equal to 1 electrical degree.

To determine the characteristic impedance values of the sample lines, open-open circuited measurements were made with frequencies offset to produce +/- 45 degrees of electrical length from resonance. Because of limitations of the vector network analyzer, the frequencies of 225 and 315 were used.

The characteristic impedance was calculated using the following formula where $R_1 + jX_1$ and $R_2 + jX_2$ are the measured impedances at the + 45 and - 45 offset frequencies, respectively.

$$Z_0 = ((R_1^2 + X_1^2)^{1/2} \times (R_2^2 + X_2^2)^{1/2})^{1/2}$$

Twr.	+45 Deg. Offset Frequency (kHz)	+ 45 Deg. Measured Impedance (ohms)	-45 Deg. Offset Frequency (kHz)	-45 Deg. Measured Impedance (ohms)	Calculated Characteristic Impedance (ohms)
1	898.2	15.09 +j48.85	738.0	8.46 -j48.16	50.0
2	902.6	15.23 +j48.96	736.9	8.82 -j47.51	49.8
3	893.7	16.55 +j48.93	731.3	9.69 -j47.01	50.2
4	897.0	15.07 +j49.82	734.7	8.41 -j47.43	50.3
5	895.9	15.06 +j50.28	731.4	8.81 -j47.40	50.3
6	897.1	15.23 +48.63	734.7	9.69 -j47.0	50.1

The sample line measured characteristic impedances meet the requirement that they must be equal within two ohms.

New Delta TCT-1 current transformers were installed at the KRMG site. They were tested at the factory to conform to moment method standards. Additional on-site verification was made by connecting their outputs to the antenna monitor with short transmission lines of equal length. A single RF current on the carrier frequency was fed through a conductor passing through all of the current transformers. The Potomac 1901 antenna monitor was calibrated using its internal calibration function prior to the measurements. The results are as follows:

Tower	Serial No.	Ratio	Phase (deg.)
1	18250	1.000	0.0
2 (reference)	18271	Reference	Reference
3	18252	1.000	0.0
4	18253	1.000	0.0
5	18254	1.000	0.0
6	18255	1.000	0.0

The requirement that the sample current transformers are accurate to within the manufacturers' specification ($\pm 2\%$ ratio and ± 2 degrees phase) has thus been demonstrated.

Direct Measurement of Power

Common point impedance measurements were made using a Delta common point bridge installed in the common point bus of the phasing and coupling system. Resistance was adjusted to 50 ohms and the reactance value was adjusted to zero.

Antenna Information

KRMG utilizes 6 identical uniform cross section guyed towers. Each radiator, above the base insulator is 73.7 degrees in electrical height. The ASRN information for each tower is as follows:

Day:

Tower	ASRN
1	1018468
2	1018467
3	1018469

Night:

1	1018469
2	1018468
3	1018467
4	1018466
5	1018465
6	1018463

Reference Field Strength Measurements

Reference field strength measurements were made on October 28 and 29, 2014. The measurements were made KRMG engineers, Wayne Smith and Normand Laramee, both of whom are experienced with making measurements of this kind. Measurements were made along each minima and maxima of the day and night patterns. The measured field strengths, descriptions and NAD-27 coordinates of the measured locations are show in Appendix A.

All measurements were made using two Potomac Instruments FIM-41 field intensity meters. FIM-41 serial number 1119 was last factory calibrated on February 15, 2013. FIM-41 serial number 525 was last factory calibrated on January, 3, 2011. Before measurements, both of the meters where checked against each other and found to be in agreement.

I certify that the information contained herein is true and correct to the best of my information and belief.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "D. Stanley Tacker", written in a cursive style.

D. Stanley Tacker

Appendix A

DAYTIME**Radial 22.5°**

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	6.13	36° 07' 53.26"	96° 15' 35.01"	10/29/2014	2:24	21	Highway 51 west of Keystone School
2	13.84	36° 11' 43.79"	96° 13' 36.49"	10/29/2014	1:08	7.2	Hollandia Rd west of CR 1200
3	18.89	36° 14' 14.77"	96° 12' 18.84"	10/29/2014	1:19	5.8	Prue Rd north of Chickasaw Rd

Radial 73.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	15.44	36° 06' 20.99"	96° 07' 1.05"	10/29/2014	15:05	170	1/10th mi N of E 41st St on Hwy 97.
2	25.47	36° 07' 16.65"	96° 00' 25.82"	10/29/2014	15:50	68	In Goodwill parking lot on Southwest Blvd.
3	39.69	36° 08' 42.20"	95° 51' 5.18"	10/29/2014	16:15	46	On I-44 at junction of I-44 & S Garnett Rd.

Radial 135°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	14.2	35° 59' 24.52"	96° 10' 27.71"	10/29/2014	12:01	13	194m E of Dixieland Rd on Hwy 66.
2	23.31	35° 55' 55.59"	96° 06' 10.82"	10/29/2014	13:55	2.8	15940 Willow Lane.
3	32.83	35° 52' 17.00"	96° 01' 42.64"	10/29/2014	14:28	2.6	402.5m E of N 3920 Rd on W 201st St S.

Radial 205°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	11.3	35° 59' 18.33"	96° 20' 19.81"	10/29/2014	11:42	3.6	337.3m E of 8th St on Hwy 33.
2	21.27	35° 54' 11.12"	96° 23' 16.07"	10/29/2014	12:27	2.1	256.7m N of W 181st St S on Hwy 48
3	32.17	35° 49' 5.61"	96° 26' 11.03"	10/29/2014	13:09	1	1.94km W of 3705 Rd on Hwy 66.

Radial 260.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	9.23	36° 04' 0.67"	96° 23' 13.61"	10/29/2014	11:25	380	7.09km N of Hwy 33 on Hwy 48.
2	15.72	36° 03' 25.80"	96° 27' 29.95"	10/29/2014	11:03	180	6.0km N of Hwy 33 on S 417th Ave. W.
3	27.16	36° 02' 24.00"	96° 35' 1.41"	10/29/2014	10:26	100	5.86km N of Hwy 33 on Hwy 99.

Radial 317.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	3.66	36° 06' 17.26"	96° 18' 47.98"	10/29/2014	10:26	100	41st St South west of 289th W. Ave
2	11.25	36° 09' 18.34"	96° 22' 13.70"	10/29/2014	11:01	35	Old Highway 51 west of Fox Run Rd
3	20.64	36° 13' 2.11"	96° 26' 28.55"	10/29/2014	11:37	12.7	County Barn Rd west of House Creek Rd

NIGHTTIME

Radial 9°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	5.64	36° 07' 50.31"	96° 16' 33.56"	10/28/2014	10:15	13	Hwy 51 by Hwy 151 entrance ramp
2	20.87	36° 15' 57.20"	96° 14' 57.56"	10/28/2014	1:02	5.6	Prue Road east of CR 1475
3	26.66	36° 19' 2.27"	96° 14' 21.01"	10/28/2014	1:15	2.3	CR 1475 south of creek

Radial 39°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	6.04	36° 07' 21.95"	96° 14' 36.92"	10/28/2014	9:42	13	225th W. Ave north of W. 42nd St. South
2	7.64	36° 08' 2.16"	96° 13' 56.64"	10/28/2014	9:48	6.4	Hwy 51 west of 213th W. Ave
3	14.5	36° 10' 54.88"	96° 11' 3.41"	10/28/2014	2:20	3.4	Shell Creek Road east of 177th E. Ave

Radial 56°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	4.57	36° 06' 12.61"	96° 14' 37.27"	10/28/2014	9:35	28	225th W. Ave north of W. 31st St South
2	11.3	36° 08' 14.14"	96° 10' 53.60"	10/28/2014	10:01	14	Hwy 51 w. of S. 169th W. Ave
3	15.69	36° 09' 33.50"	96° 08' 27.46"	10/28/2014	2:50	6.8	Willow St, east side

Radial 96.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	24.83	36° 03' 18.56"	95° 00' 41.44"	10/28/2014	11:45	72	7550 S. Union Ave
2	31.72	36° 02' 52.71"	95° 56' 7.27"	10/28/2014	11:15	62	7835 S. Louisville Ave
3	38.87	36° 02' 25.80"	95° 51' 22.90"	10/28/2014	10:48	36	S of junction of S. 107th E. Ave and E. 84th Pl at Thomas Jefferson Elementary

Radial 139°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	13.56	35° 59' 18.46"	96° 11' 13.20"	10/28/2014	13:18	11	On Hwy 66 next to gas station.
2	22.94	35° 55' 28.95"	96° 07' 7.59"	10/28/2014	12:58	2.6	At junction of 165th and S 113th Ave. W.
3	34.76	35° 50' 39.78"	96° 01' 58.82"	10/28/2014	12:15	0.74	On N 190 Road, N of junction of N 190 Road and Hectorville Road.

Radial 156.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	11.18	35° 59' 18.23"	96° 14' 10.49"	10/28/2014	13:59	4.6	676.7m E of S 225th Ave W on Hwy 33.
2	20.01	35° 54' 56.16"	96° 11' 49.79"	10/28/2014	13:40	3.6	On W 171st St S at S 184th West Ave.
3	35.92	35° 47' 3.59"	96° 07' 36.80"	10/28/2014	12:30	1.6	On Grimes Road, E of junction of Grimes Road & N 135 Road.

Radial 198.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	10.98	35° 59' 12.78"	96° 19' 28.12"	10/28/2014	14:12	10	970m E of 8th St on Hwy 33.
2	21.05	35° 54' 3.78"	96° 21' 35.34"	10/28/2014	14:43	4	175.2m W of S 327th West Ave on Hwy 66.
3	27.89	35° 50' 33.63"	96° 23' 1.66"	10/28/2014	15:09	3.5	35m E of RR tracks on Refinery Rd.

Radial 246.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	9.92	36° 02' 41.65"	96° 23' 12.89"	10/29/2014	9:15	260	4.65m N of Hwy 33 on Hwy 48.
2	18.69	36° 00' 47.91"	96° 28' 34.58"	10/29/2014	9:31	110	1.16 N of Hwy 33 on S 433rd Ave. W.
3	29.25	35° 58' 30.64"	96° 35' 1.35"	10/29/2014	9:49	66	1.3km S of Hwy 33 on Hwy 16.

Radial 277.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	9.19	36° 05' 28.86"	96° 23' 13.81"	10/28/2014	10:41	13	Hwy 48 north of W. 51st St South
2	14.03	36° 05' 49.18"	96° 26' 25.95"	10/28/2014	10:49	5	South 401st W Ave north of W 51st South
3	26.21	36° 06' 40.01"	96° 34' 29.90"	10/28/2014	11:15	2.5	Hwy 99 north of W 41st St South

Radial 305°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	9.82	36° 07' 52.41"	96° 22' 31.24"	10/28/2014	10:35	5.6	Hwy 51 east of Old Hwy 48
2	12.46	36° 08' 41.39"	96° 23' 58.03"	10/28/2014	11:37	2.7	Highway 48 south of West 11th St South
3	21.42	36° 11' 27.45"	96° 28' 52.39"	10/28/2014	11:49	1.6	Airport Rd north of Benight Rd

Radial 337.5°

Point #	Dist. km	Latitude	Longitude	Date	Time	Field mVm	Point Description
1	5.88	36° 07' 45.81"	96° 18' 38.98"	10/28/2014	10:22	6.8	Hwy 51 east of Pelican Pl
2	27.39	36° 18' 29.00"	96° 24' 9.45"	10/28/2014	12:37	4	CR 1705 north of Prue Rd
3	31.97	36° 20' 46.15"	96° 25' 20.03"	10/28/2014	12:20	3.2	Hwy 99 west of CR 1807