Wiley Rein LLP

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December 8, 2011

Mark Lipp
202.719.7503
mlipp@wileyrein.com

BY HAND DELIVERY

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

Re: **Application for AM Broadcast Station License/**
Request for Program Test Authority
Multicultural Radio Broadcasting Licensee, LLC
Station KYPA(AM), Los Angeles, California
Facility Identifier Number 18273
File Number BP-20050228ACB

Dear Ms. Dortch:

Transmitted herewith on behalf of Multicultural Radio Broadcasting Licensee, LLC, the licensee of Station KYPA(AM), are an original and two copies of its application for an AM broadcast station license to cover the construction authorized in construction permit BP-20050228ACB. This Permit allows operation on 1230 kHz with 1 kW of power during daytime and nighttime hours in the non-directional mode. The site is shared with co-owned Station KBLA(AM), Santa Monica, California. The Engineering Report, prepared by Edward A. Schober, P.E., includes all of the technical details and a complete method of moments proof-of-performance.

If there are any questions about this Application, please contact undersigned counsel for Multicultural Radio Broadcasting Licensee, LLC.

Sincerely,

Mark Lipp
Enclosure

13385122.1

Ann

Federal Communications Commission
Washington, D. C. 20554

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

FOR FCC USE ONLY	

SW 01/25/1

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY
FILE NO. BMML-20110209 KKR

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)
Wiley Rein LLP

MAILING ADDRESS (Line 1) (Maximum 35 characters)
1776 K Street, NW

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
Washington	DC	20006

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
202.719.7503	KYPA	18273

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

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

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

C. If Yes, provide the following information:

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

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M M R	0 0 0 1	$ 635.00	

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

(A)	(B)	(C)	FOR FCC USE ONLY
M O R	0 0 0 1	$ 730.00	

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	FOR FCC USE ONLY
$ 1,365.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Multicultural Radio Broadcasting Licensee, LLC		
MAILING ADDRESS 27 William Street, 11th Floor		
CITY New York	STATE New York	ZIP CODE 10005

2. This application is for:

☑ Commercial ☐ Noncommercial

☑ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
KYPA	Los Angeles	BP-20050228ACB	N/A	12/19/2011

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

If No, explain in an Exhibit.

☐ Yes ☑ No

Exhibit No.

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

If No, state exceptions in an Exhibit.

☑ Yes ☐ No

Exhibit No.

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

If Yes, explain in an Exhibit.

☐ Yes ☑ No

Exhibit No.

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

If No, explain in an Exhibit.

☐ Yes ☐ No

☑ 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	Signature	
Arthur S. Liu	[signature]	
Title	**Date**	**Telephone Number**
President	12/07/2011	212.431.4300

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

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

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

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

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

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
MULTICULTURAL RADIO BROADCASTING LICENSEE, LLC

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☑ Station License ☐ Direct Measurement of Power

1. Facilities authorized in construction permit					
Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KYPA	BP20050228ACB	1230	UNLIMITED	1.0	1.0

2. Station location	
State	City or Town
CALIFORNIA	LOS ANGELES

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
CA	Los Angeles	Los Angeles	1700 N Alvarado Street

4. Main studio location			
State	County	City or Town	Street address (or other identification)
CA	Los Angeles	Pasadena	747 E. Green Street

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
CA	Los Angeles	Pasadena	747 E. Green Street

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.

8. Operating constants:	
RF common point or antenna current (in amperes) without modulation for night system 4.65	RF common point or antenna current (in amperes) without modulation for day system 4.65
Measured antenna or common point resistance (in ohms) at operating frequency Night 50.0 Day 50.0	Measured antenna or common point reactance (in ohms) at operating frequency Night 3+ Day 3+

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 (KBLA tower 6)	144.7 degrees	144.7 degrees	0.442	0.442	N/A	N/A
2	0 degrees	0 degrees	1.0	1.0		

Manufacturer and type of antenna monitor: Potomac Instruments 1901

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.
Guyed Uniform Cross Section	63.4	61	63.4	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 34 ° 5 ' 8 "	West Longitude 118 ° 15 ' 24 "

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) EDWARD A. SCHOBER, PE	Signature (check appropriate box below) Edward A. Schober
Address (include ZIP Code) Radiotechniques Engineering, LLC P.O. Box 367 Haddon Heights, NJ 08035	Date 31 November 2011 Telephone No. (Include Area Code) 856-546-8008

☐ Technical Director ☑ Registered Professional Engineer

☐ Chief Operator ☐ Technical Consultant

☐ Other (specify)

RADIOTECHNIQUES®
402 Tenth Avenue • PO Box 367 • Haddon Heights, NJ 08035

Antenna System Proof of Performance
Method of Moments Modeling
KYPA – Los Angeles, CA
Multicultural Radio Broadcasters Licensee, LLC
November 2011

Abstract

This report has been prepared to demonstrate that the KYPA day and night antenna systems comply with the provisions of Section 73.151(c) , and with the terms of the construction permit BP-20050228ACB. The KYPA antenna system consists of two guyed, uniform, base insulated towers operating with identical parameters day and night.

This site is shared with co-owned KBLA, 1580 kHz which has operated with substantially the same licensed facilities since 1991. KBLA operates with four towers day and six towers night. Tower 2 is shared by KBLA and KYPA, and KBLA tower 6 is shared as tower 1 of KYPA. There are filters at the tower bases to isolate the ATU outputs of each station. Additional filters are installed in the phasing equipment to suppress undesired intermodulation products. Both of the stations use tower 2 in the day and night modes of operation and KYPA uses the KBLA tower 6 (KYPA tower 1) which is only used in the KBLA night pattern. For purposes of simplicity, KYPA tower 1 is physically labeled on site as tower 6, and may be referred to as tower 6 in some tables of this report.

The information provided in this application demonstrates that the array has now been adjusted to conform with the construction permit, as modified, and is constructed in accordance with the requirements of §73.151(c) of the FCC Rules. Program test authority is requested at full power Day and Night.

Analysis and Modeling

Tower base impedance measurements were made at the final J-plugs within the antenna filter units. Measurements were made using an Array Solutions PowerAIM 120 vector impedance meter. Before measurements were made, the PowerAIM was calibrated using precision 50 Ohm, precision short and precision open circuits. For open circuit measurement other towers were open circuited at the same points for each of the measurements.

The KBLA towers have tower sampling loops installed at the location of the tower current loop for each tower. KYPA was operated using tower 1 at 1 kW, KBLA was taken off the air, and the shunt detuning reactance across each of towers numbered 1 and 3 - 5 bases (before the KYPA isolation filter) was adjusted for minimum signal received on the tower mounted loop. The detuning was accomplished using the KBLA antenna monitor in amplitude mode to indicate the current at each tower loop. KBLA Towers 1 and 3-5 are included in the KYPA model for open-short modeling and for antenna parameter synthesis. The sample loop isolation coils at the KYPA towers were temporarily disconnected for open-short measurements.

Each of the tower bases were shorted across the ball gap lightning arrester and the reactance of the feed connection from the antenna coupler to the tower was measured. There is a Kintronics SDC-1F static drain choke in each diplexer, connected from the antenna terminal to ground. According to the Kintronics specification, the impedance of this choke is in excess of 10,000 Ohms at 1230 kHz, and was not considered in this analysis.

The KYPA towers (KBLA towers 2 and 6) have a tower mounted vacuum capacitor installed with one terminal of the capacitor bonded to the tower and the other terminal connected to the copper feed tubing that connects to the diplexer filter terminals. This common series component decreases the operating voltage at the diplexer without effecting the current feeding the tower. The capacitor is mounted in a weatherproof metal box bonded to the tower. A bowl insulator is used to connect the capacitor to the feed tubing.

The results of these impedance measurements are shown below:

The tower impedance for open-short measurements was measured directly at the diplexer input J-Plug. The isocoils to isolate the KBLA sample loops were disconnected for these measurements.

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Antenna System Proof of Performance
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November 2011

Tower	Other twr open 1, 3-5 Detuned	Other twr shorted 1, 3-5 Detuned	Tower base shorted	Base and Capacitor shorted
1 (KBLA tower 6)	47.39 +j 34.39Ω	60.75 +j 51.63Ω	5.0 -j 101.5Ω	3.4 +j 46.84Ω
2	52.7 +j 50.71Ω	66.97 +j 54.01Ω	0.4 -j 116.6Ω	0.4 +j 38.7Ω

Each tower was modeled as a single wire, extending from ground. Open tower models utilized a very high load impedance to simulate an open circuit at the first pulse. Detuned towers were modeled using the value of inductance that was required to detune the tower, ie. 75 uH in this case.

All antenna modeling was conducted using *Expert MININEC Broadcast Professional* Ver 14.6. The model summaries are attached as Table 1 through 4.

Table 1

```
Y:\AM\Multicultural\KYPA\Buildout\Proof\KYPAt6625modeshort35  11-30-2011
11:10:47

KYPA
1230 kHz
1 Kw Drive Tower 1 (KBLA T6)
Short T2
Other towers detuned


GEOMETRY
Dimensions in meters
Environment: perfect ground

wire   caps  Radius       Angle        Z            radius      segs
 1      2    0            0            0            .35          15
             0            0            62.5
 2      2    42.1933      340.         0            .35          15
             42.1933      340.         62.5
 3      2    84.2866      340.         0            .35          15
             84.2866      340.         62.5
 4      2    42.1933      233.         0            .35          15
             42.1933      233.         62.5
 5      2    50.1951      286.5        0            .35          15
```

		50.1951	286.5	62.5		
6	2	82.5776	310.75	0	.35	15
		82.5776	310.75	62.5		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.19	1	4.19
segment/radius ratio	1	11.9714	1	11.9714
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (KHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1,230.	0	1	.0171905	.0171905

Sources

source	node	sector	magnitude	phase	type
1	76	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	0	.075	0	0
2	31	0	0	.075	0	0
3	46	0	0	.075	0	0
4	61	0	0	.075	0	0
5	16	0	0	.001	0	0

Y:\AM\Multicultural\KYPA\Buildout\Proof\KYPAt6625modeshort35 11-30-2011
11:10:47

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 76, sector 1							
1,230.	51.673	51.849	73.201	45.1	2.6666	-6.8487	-1.0051

Y:\AM\Multicultural\KYPA\Buildout\Proof\KYPAt6625modeshort35 11-30-2011

11:10:47

CURRENT peak
Frequency = 1230 KHz
Input power = .00482164 watts
Efficiency = 100. %
coordinates in meters

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	2.64E-04	7.5	2.61E-04	3.43E-05
2	0	0	4.19	1.43E-04	7.7	1.42E-04	1.92E-05
3	0	0	8.38	7.33E-05	9.1	7.24E-05	1.16E-05
4	0	0	12.57	1.88E-05	21.7	1.75E-05	6.95E-06
5	0	0	16.76	2.63E-05	170.1	-2.59E-05	4.55E-06
6	0	0	20.95	5.97E-05	176.2	-5.96E-05	3.97E-06
7	0	0	25.14	8.46E-05	176.8	-8.44E-05	4.79E-06
8	0	0	29.33	1.01E-04	176.3	-1.01E-04	6.62E-06
9	0	0	33.52	1.11E-04	175.3	-1.1E-04	9.01E-06
10	0	0	37.71	1.13E-04	174.2	-1.12E-04	1.15E-05
11	0	0	41.9	1.09E-04	172.8	-1.08E-04	1.36E-05
12	0	0	46.09	9.93E-05	171.4	-9.82E-05	1.49E-05
13	0	0	50.28	8.41E-05	169.8	-8.27E-05	1.49E-05
14	0	0	54.47	6.35E-05	168.2	-6.22E-05	1.3E-05
15	0	0	58.66	3.75E-05	166.5	-3.64E-05	8.78E-06
END	0	0	62.85	0	0	0	0
GND	39.6487	-14.431	0	7.93E-03	59.7	4.E-03	6.85E-03
17	39.6487	-14.431	4.19	7.84E-03	59.7	3.95E-03	6.77E-03
18	39.6487	-14.431	8.38	7.69E-03	59.7	3.88E-03	6.64E-03
19	39.6487	-14.431	12.57	7.48E-03	59.7	3.77E-03	6.45E-03
20	39.6487	-14.431	16.76	7.19E-03	59.6	3.63E-03	6.2E-03
21	39.6487	-14.431	20.95	6.83E-03	59.6	3.46E-03	5.89E-03
22	39.6487	-14.431	25.14	6.41E-03	59.5	3.25E-03	5.52E-03
23	39.6487	-14.431	29.33	5.92E-03	59.4	3.01E-03	5.1E-03
24	39.6487	-14.431	33.52	5.37E-03	59.4	2.74E-03	4.62E-03
25	39.6487	-14.431	37.71	4.77E-03	59.3	2.44E-03	4.1E-03
26	39.6487	-14.431	41.9	4.12E-03	59.1	2.11E-03	3.54E-03
27	39.6487	-14.431	46.09	3.42E-03	59.	1.76E-03	2.93E-03
28	39.6487	-14.431	50.28	2.68E-03	58.9	1.38E-03	2.29E-03
29	39.6487	-14.431	54.47	1.89E-03	58.7	9.81E-04	1.62E-03
30	39.6487	-14.431	58.66	1.05E-03	58.6	5.47E-04	8.95E-04
END	39.6487	-14.431	62.85	0	0	0	0
GND	79.2035	-28.8277	0	8.2E-04	56.7	4.51E-04	6.85E-04
32	79.2035	-28.8277	4.19	4.44E-04	56.6	2.45E-04	3.71E-04
33	79.2035	-28.8277	8.38	2.21E-04	55.8	1.24E-04	1.83E-04
34	79.2035	-28.8277	12.57	4.27E-05	46.2	2.95E-05	3.08E-05

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35	79.2035	-28.8277	16.76	1.04E-04	244.1	-4.56E-05	-9.39E-05
36	79.2035	-28.8277	20.95	2.21E-04	241.9	-1.04E-04	-1.95E-04
37	79.2035	-28.8277	25.14	3.1E-04	241.8	-1.47E-04	-2.74E-04
38	79.2035	-28.8277	29.33	3.74E-04	242.1	-1.75E-04	-3.31E-04
39	79.2035	-28.8277	33.52	4.14E-04	242.6	-1.9E-04	-3.67E-04
40	79.2035	-28.8277	37.71	4.29E-04	243.2	-1.93E-04	-3.83E-04
41	79.2035	-28.8277	41.9	4.21E-04	243.9	-1.85E-04	-3.78E-04
42	79.2035	-28.8277	46.09	3.9E-04	244.6	-1.67E-04	-3.52E-04
43	79.2035	-28.8277	50.28	3.35E-04	245.4	-1.4E-04	-3.05E-04
44	79.2035	-28.8277	54.47	2.58E-04	246.1	-1.04E-04	-2.36E-04
45	79.2035	-28.8277	58.66	1.55E-04	246.9	-6.07E-05	-1.42E-04
END	79.2035	-28.8277	62.85	0	0	0	0
GND	-25.3926	-33.6971	0	4.72E-04	7.6	4.67E-04	6.24E-05
47	-25.3926	-33.6971	4.19	2.55E-04	7.7	2.53E-04	3.41E-05
48	-25.3926	-33.6971	8.38	1.27E-04	8.1	1.26E-04	1.79E-05
49	-25.3926	-33.6971	12.57	2.48E-05	12.8	2.42E-05	5.49E-06
50	-25.3926	-33.6971	16.76	5.86E-05	183.9	-5.84E-05	-4.01E-06
51	-25.3926	-33.6971	20.95	1.25E-04	185.1	-1.24E-04	-1.11E-05
52	-25.3926	-33.6971	25.14	1.76E-04	185.3	-1.75E-04	-1.61E-05
53	-25.3926	-33.6971	29.33	2.12E-04	185.2	-2.11E-04	-1.93E-05
54	-25.3926	-33.6971	33.52	2.33E-04	185.1	-2.33E-04	-2.08E-05
55	-25.3926	-33.6971	37.71	2.41E-04	185.	-2.41E-04	-2.1E-05
56	-25.3926	-33.6971	41.9	2.36E-04	184.8	-2.35E-04	-1.99E-05
57	-25.3926	-33.6971	46.09	2.18E-04	184.7	-2.17E-04	-1.78E-05
58	-25.3926	-33.6971	50.28	1.87E-04	184.5	-1.86E-04	-1.48E-05
59	-25.3926	-33.6971	54.47	1.43E-04	184.4	-1.43E-04	-1.09E-05
60	-25.3926	-33.6971	58.66	8.55E-05	184.2	-8.53E-05	-6.29E-06
END	-25.3926	-33.6971	62.85	0	0	0	0
GND	14.2562	-48.1281	0	8.17E-04	56.	4.56E-04	6.77E-04
62	14.2562	-48.1281	4.19	4.42E-04	55.9	2.48E-04	3.66E-04
63	14.2562	-48.1281	8.38	2.21E-04	55.	1.26E-04	1.81E-04
64	14.2562	-48.1281	12.57	4.34E-05	44.6	3.09E-05	3.05E-05
65	14.2562	-48.1281	16.76	1.03E-04	244.3	-4.46E-05	-9.26E-05
66	14.2562	-48.1281	20.95	2.18E-04	241.8	-1.03E-04	-1.92E-04
67	14.2562	-48.1281	25.14	3.07E-04	241.7	-1.46E-04	-2.7E-04
68	14.2562	-48.1281	29.33	3.7E-04	242.	-1.74E-04	-3.27E-04
69	14.2562	-48.1281	33.52	4.09E-04	242.5	-1.89E-04	-3.63E-04
70	14.2562	-48.1281	37.71	4.24E-04	243.1	-1.92E-04	-3.78E-04
71	14.2562	-48.1281	41.9	4.16E-04	243.8	-1.84E-04	-3.73E-04
72	14.2562	-48.1281	46.09	3.85E-04	244.5	-1.66E-04	-3.47E-04
73	14.2562	-48.1281	50.28	3.31E-04	245.2	-1.39E-04	-3.01E-04
74	14.2562	-48.1281	54.47	2.55E-04	246.	-1.04E-04	-2.33E-04
75	14.2562	-48.1281	58.66	1.53E-04	246.7	-6.04E-05	-1.41E-04
END	14.2562	-48.1281	62.85	0	0	0	0
GND	53.9033	-62.5579	0	.013661	314.9	9.64E-03	-9.68E-03

77	53.9033	-62.5579	4.19	.0141576	312.7	9.6E-03	-.0104102
78	53.9033	-62.5579	8.38	.0142837	311.4	9.45E-03	-.0107101
79	53.9033	-62.5579	12.57	.0141993	310.4	9.21E-03	-.0108057
80	53.9033	-62.5579	16.76	.0139212	309.6	8.88E-03	-.0107212
81	53.9033	-62.5579	20.95	.0134597	308.9	8.46E-03	-.0104696
82	53.9033	-62.5579	25.14	.0128226	308.3	7.95E-03	-.0100596
83	53.9033	-62.5579	29.33	.0120178	307.8	7.36E-03	-9.5E-03
84	53.9033	-62.5579	33.52	.0110538	307.3	6.7E-03	-8.79E-03
85	53.9033	-62.5579	37.71	9.94E-03	306.8	5.96E-03	-7.95E-03
86	53.9033	-62.5579	41.9	8.68E-03	306.4	5.16E-03	-6.99E-03
87	53.9033	-62.5579	46.09	7.29E-03	306.	4.29E-03	-5.9E-03
88	53.9033	-62.5579	50.28	5.77E-03	305.7	3.37E-03	-4.69E-03
89	53.9033	-62.5579	54.47	4.12E-03	305.3	2.38E-03	-3.36E-03
90	53.9033	-62.5579	58.66	2.31E-03	305.	1.32E-03	-1.89E-03
END	53.9033	-62.5579	62.85	0	0	0	0

Table 2

Y:\AM\Multicultural\KYPA\Buildout\Proof\KYPAt6625modelopen35 11-30-2011 11:42:01

KYPA
1230 kHz
1 Kw Drive Tower1 (KBLA T6)
Open T2
Other towers detuned

GEOMETRY
Dimensions in meters
Environment: perfect ground

wire	caps	Radius	Angle	Z	radius	segs
1	2	0	0	0	.35	15
		0	0	62.5		
2	2	42.1933	340.	0	.35	15
		42.1933	340.	62.5		
3	2	84.2866	340.	0	.35	15
		84.2866	340.	62.5		
4	2	42.1933	233.	0	.35	15

		42.1933	233.	62.5		
5	2	50.1951	286.5	0	.35	15
		50.1951	286.5	62.5		
6	2	82.5776	310.75	0	.35	15
		82.5776	310.75	62.5		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.19	1	4.19
segment/radius ratio	1	11.9714	1	11.9714
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (KHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1,230.	0	1	.0171905	.0171905

Sources

source	node	sector	magnitude	phase	type
1	76	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	0	.075	0	0
2	31	0	0	.075	0	0
3	46	0	0	.075	0	0
4	61	0	0	.075	0	0
5	16	0	0	0	5.E-05	0

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11:42:01

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 76, sector 1							
1,230.	44.672	32.586	55.294	36.1	1.9841	-9.6355	-.50003

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CURRENT peak
Frequency = 1230 KHz
Input power = .00730545 watts
Efficiency = 100. %
coordinates in meters

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	8.45E-04	338.4	7.86E-04	-3.11E-04
2	0	0	4.19	4.58E-04	338.5	4.26E-04	-1.68E-04
3	0	0	8.38	2.27E-04	338.7	2.12E-04	-8.26E-05
4	0	0	12.57	4.26E-05	341.7	4.05E-05	-1.34E-05
5	0	0	16.76	1.08E-04	156.3	-9.87E-05	4.34E-05
6	0	0	20.95	2.28E-04	157.	-2.1E-04	8.93E-05
7	0	0	25.14	3.21E-04	157.1	-2.96E-04	1.25E-04
8	0	0	29.33	3.87E-04	157.1	-3.57E-04	1.51E-04
9	0	0	33.52	4.28E-04	157.1	-3.94E-04	1.67E-04
10	0	0	37.71	4.44E-04	157.	-4.09E-04	1.73E-04
11	0	0	41.9	4.36E-04	157.	-4.01E-04	1.7E-04
12	0	0	46.09	4.03E-04	157.	-3.71E-04	1.58E-04
13	0	0	50.28	3.47E-04	156.9	-3.19E-04	1.36E-04
14	0	0	54.47	2.67E-04	156.9	-2.45E-04	1.05E-04
15	0	0	58.66	1.6E-04	156.9	-1.47E-04	6.29E-05
END	0	0	62.85	0	0	0	0
GND	39.6487	-14.431	0	2.46E-04	199.1	-2.33E-04	-8.05E-05
17	39.6487	-14.431	4.19	7.42E-04	199.1	-7.01E-04	-2.44E-04
18	39.6487	-14.431	8.38	1.02E-03	199.3	-9.63E-04	-3.36E-04
19	39.6487	-14.431	12.57	1.22E-03	199.4	-1.16E-03	-4.07E-04
20	39.6487	-14.431	16.76	1.37E-03	199.5	-1.29E-03	-4.59E-04
21	39.6487	-14.431	20.95	1.47E-03	199.7	-1.38E-03	-4.95E-04
22	39.6487	-14.431	25.14	1.51E-03	199.9	-1.42E-03	-5.15E-04
23	39.6487	-14.431	29.33	1.51E-03	200.2	-1.42E-03	-5.21E-04
24	39.6487	-14.431	33.52	1.47E-03	200.4	-1.38E-03	-5.12E-04
25	39.6487	-14.431	37.71	1.38E-03	200.7	-1.3E-03	-4.89E-04
26	39.6487	-14.431	41.9	1.26E-03	201.	-1.18E-03	-4.51E-04
27	39.6487	-14.431	46.09	1.1E-03	201.3	-1.02E-03	-3.98E-04
28	39.6487	-14.431	50.28	8.99E-04	201.6	-8.36E-04	-3.31E-04
29	39.6487	-14.431	54.47	6.62E-04	201.9	-6.14E-04	-2.47E-04
30	39.6487	-14.431	58.66	3.82E-04	202.2	-3.53E-04	-1.44E-04
END	39.6487	-14.431	62.85	0	0	0	0
GND	79.2035	-28.8277	0	1.05E-03	31.9	8.93E-04	5.56E-04
32	79.2035	-28.8277	4.19	5.7E-04	31.8	4.85E-04	3.E-04

33	79.2035	-28.8277	8.38	2.84E-04	31.	2.43E-04	1.46E-04
34	79.2035	-28.8277	12.57	5.47E-05	21.2	5.1E-05	1.98E-05
35	79.2035	-28.8277	16.76	1.34E-04	219.4	-1.04E-04	-8.51E-05
36	79.2035	-28.8277	20.95	2.83E-04	217.2	-2.26E-04	-1.71E-04
37	79.2035	-28.8277	25.14	3.98E-04	217.1	-3.18E-04	-2.4E-04
38	79.2035	-28.8277	29.33	4.8E-04	217.4	-3.82E-04	-2.92E-04
39	79.2035	-28.8277	33.52	5.31E-04	217.9	-4.19E-04	-3.26E-04
40	79.2035	-28.8277	37.71	5.51E-04	218.5	-4.31E-04	-3.43E-04
41	79.2035	-28.8277	41.9	5.4E-04	219.2	-4.18E-04	-3.41E-04
42	79.2035	-28.8277	46.09	5.E-04	219.9	-3.83E-04	-3.21E-04
43	79.2035	-28.8277	50.28	4.31E-04	220.7	-3.26E-04	-2.81E-04
44	79.2035	-28.8277	54.47	3.31E-04	221.5	-2.48E-04	-2.19E-04
45	79.2035	-28.8277	58.66	1.99E-04	222.2	-1.47E-04	-1.34E-04
END	79.2035	-28.8277	62.85	0	0	0	0
GND	-25.3926	-33.6971	0	7.89E-04	336.6	7.24E-04	-3.13E-04
47	-25.3926	-33.6971	4.19	4.27E-04	336.6	3.92E-04	-1.69E-04
48	-25.3926	-33.6971	8.38	2.12E-04	336.9	1.95E-04	-8.32E-05
49	-25.3926	-33.6971	12.57	3.98E-05	340.4	3.75E-05	-1.34E-05
50	-25.3926	-33.6971	16.76	1.01E-04	154.1	-9.06E-05	4.4E-05
51	-25.3926	-33.6971	20.95	2.13E-04	154.9	-1.93E-04	9.04E-05
52	-25.3926	-33.6971	25.14	3.E-04	155.	-2.72E-04	1.27E-04
53	-25.3926	-33.6971	29.33	3.61E-04	155.	-3.28E-04	1.53E-04
54	-25.3926	-33.6971	33.52	3.99E-04	155.	-3.62E-04	1.69E-04
55	-25.3926	-33.6971	37.71	4.14E-04	154.9	-3.75E-04	1.76E-04
56	-25.3926	-33.6971	41.9	4.06E-04	154.8	-3.67E-04	1.73E-04
57	-25.3926	-33.6971	46.09	3.75E-04	154.7	-3.39E-04	1.6E-04
58	-25.3926	-33.6971	50.28	3.23E-04	154.7	-2.92E-04	1.38E-04
59	-25.3926	-33.6971	54.47	2.48E-04	154.6	-2.24E-04	1.06E-04
60	-25.3926	-33.6971	58.66	1.49E-04	154.5	-1.34E-04	6.4E-05
END	-25.3926	-33.6971	62.85	0	0	0	0
GND	14.2562	-48.1281	0	1.04E-03	30.8	8.96E-04	5.34E-04
62	14.2562	-48.1281	4.19	5.65E-04	30.7	4.86E-04	2.88E-04
63	14.2562	-48.1281	8.38	2.82E-04	29.7	2.45E-04	1.4E-04
64	14.2562	-48.1281	12.57	5.62E-05	18.7	5.32E-05	1.8E-05
65	14.2562	-48.1281	16.76	1.31E-04	219.7	-1.E-04	-8.35E-05
66	14.2562	-48.1281	20.95	2.77E-04	217.1	-2.21E-04	-1.67E-04
67	14.2562	-48.1281	25.14	3.9E-04	216.9	-3.12E-04	-2.34E-04
68	14.2562	-48.1281	29.33	4.71E-04	217.2	-3.75E-04	-2.84E-04
69	14.2562	-48.1281	33.52	5.2E-04	217.7	-4.12E-04	-3.18E-04
70	14.2562	-48.1281	37.71	5.39E-04	218.3	-4.23E-04	-3.34E-04
71	14.2562	-48.1281	41.9	5.29E-04	219.	-4.11E-04	-3.33E-04
72	14.2562	-48.1281	46.09	4.9E-04	219.7	-3.77E-04	-3.13E-04
73	14.2562	-48.1281	50.28	4.22E-04	220.5	-3.21E-04	-2.74E-04
74	14.2562	-48.1281	54.47	3.24E-04	221.2	-2.44E-04	-2.14E-04
75	14.2562	-48.1281	58.66	1.95E-04	222.	-1.45E-04	-1.3E-04

END	14.2562	-48.1281	62.85	0	0	0	0
GND	53.9033	-62.5579	0	.0180851	323.9	.0146109	-.0106579
77	53.9033	-62.5579	4.19	.0184667	321.9	.0145377	-.0113874
78	53.9033	-62.5579	8.38	.0184744	320.8	.0143187	-.0116738
79	53.9033	-62.5579	12.57	.0182417	319.9	.0139558	-.0117471
80	53.9033	-62.5579	16.76	.0177836	319.2	.0134523	-.0116315
81	53.9033	-62.5579	20.95	.0171102	318.5	.0128126	-.01134
82	53.9033	-62.5579	25.14	.0162304	317.9	.0120423	-.0108816
83	53.9033	-62.5579	29.33	.0151535	317.4	.0111481	-.010264
84	53.9033	-62.5579	33.52	.0138897	316.9	.0101376	-9.49E-03
85	53.9033	-62.5579	37.71	.0124497	316.4	9.02E-03	-8.58E-03
86	53.9033	-62.5579	41.9	.0108442	316.	7.8E-03	-7.53E-03
87	53.9033	-62.5579	46.09	9.08E-03	315.6	6.49E-03	-6.36E-03
88	53.9033	-62.5579	50.28	7.17E-03	315.2	5.09E-03	-5.05E-03
89	53.9033	-62.5579	54.47	5.11E-03	314.8	3.6E-03	-3.62E-03
90	53.9033	-62.5579	58.66	2.86E-03	314.5	2.E-03	-2.04E-03
END	53.9033	-62.5579	62.85	0	0	0	0

Table 3

Y:\AM\Multicultural\KYPA\Buildout\Proof\KYPA625modelshort35 11-30-2011 14:50:50

KYPA
1230 kHz
1 Kw tower 2 Driven
Tower 1 shorted,
others detuned

GEOMETRY
Dimensions in meters
Environment: perfect ground

wire	caps	Radius	Angle	Z	radius	segs
1	2	0	0	0	.35	15
		0	0	62.5		
2	2	42.1933	340.	0	.35	15
		42.1933	340.	62.5		
3	2	84.2866	340.	0	.35	15
		84.2866	340.	62.5		
4	2	42.1933	233.	0	.35	15

		42.1933	233.	62.5		
5	2	50.1951	286.5	0	.35	15
		50.1951	286.5	62.5		
6	2	82.5776	310.75	0	.35	15
		82.5776	310.75	62.5		

Number of wires = 6
current nodes = 90

Individual wires	minimum wire	minimum value	maximum wire	maximum value
segment length	1	4.19	1	4.19
segment/radius ratio	1	11.9714	1	11.9714
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION

Frequencies (KHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1,230.	0	1	.0171905	.0171905

Sources

source	node	sector	magnitude	phase	type
1	16	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	0	.075	0	0
2	31	0	0	.075	0	0
3	46	0	0	.075	0	0
4	61	0	0	.075	0	0
5	76	0	0	.001	0	0

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14:50:50

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 16, sector 1							
1,230.	51.634	50.709	72.37	44.5	2.6146	-6.9999	-.96655

RADIOTECHNIQUES
402 Tenth Avenue • PO Box 367 • Haddon Heights, NJ 08035

Antenna System Proof of Performance
Method of Moments Modeling
KYPA – Los Angeles, CA
Multicultural Radio Broadcasters Licensee, LLC
November 2011

Y:\AM\Multicultural\KYPA\Buildout\Proof\KYPA625modelshort35 11-30-2011 14:50:50

CURRENT peak
Frequency = 1230 KHz
Input power = .00492925 watts
Efficiency = 100. %
coordinates in meters

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	1.07E-03	40.8	8.06E-04	6.97E-04
2	0	0	4.19	5.77E-04	40.8	4.37E-04	3.77E-04
3	0	0	8.38	2.86E-04	40.2	2.19E-04	1.85E-04
4	0	0	12.57	5.26E-05	32.7	4.43E-05	2.84E-05
5	0	0	16.76	1.39E-04	226.2	-9.64E-05	-1.01E-04
6	0	0	20.95	2.93E-04	224.7	-2.08E-04	-2.06E-04
7	0	0	25.14	4.11E-04	224.6	-2.93E-04	-2.89E-04
8	0	0	29.33	4.96E-04	224.8	-3.52E-04	-3.5E-04
9	0	0	33.52	5.49E-04	225.2	-3.87E-04	-3.9E-04
10	0	0	37.71	5.71E-04	225.6	-3.99E-04	-4.08E-04
11	0	0	41.9	5.61E-04	226.1	-3.89E-04	-4.04E-04
12	0	0	46.09	5.2E-04	226.7	-3.57E-04	-3.78E-04
13	0	0	50.28	4.49E-04	227.2	-3.05E-04	-3.29E-04
14	0	0	54.47	3.46E-04	227.8	-2.32E-04	-2.56E-04
15	0	0	58.66	2.08E-04	228.3	-1.38E-04	-1.55E-04
END	0	0	62.85	0	0	0	0
GND	39.6487	-14.431	0	.0138178	315.5	9.86E-03	-9.68E-03
17	39.6487	-14.431	4.19	.0143079	313.3	9.81E-03	-.0104159
18	39.6487	-14.431	8.38	.0144283	312.	9.66E-03	-.0107151
19	39.6487	-14.431	12.57	.0143376	311.1	9.42E-03	-.0108097
20	39.6487	-14.431	16.76	.0140524	310.3	9.08E-03	-.0107241
21	39.6487	-14.431	20.95	.0135827	309.6	8.65E-03	-.0104711
22	39.6487	-14.431	25.14	.0129365	309.	8.13E-03	-.0100597
23	39.6487	-14.431	29.33	.0121219	308.4	7.53E-03	-9.5E-03
24	39.6487	-14.431	33.52	.0111472	307.9	6.85E-03	-8.79E-03
25	39.6487	-14.431	37.71	.0100213	307.5	6.1E-03	-7.95E-03
26	39.6487	-14.431	41.9	8.75E-03	307.1	5.28E-03	-6.98E-03
27	39.6487	-14.431	46.09	7.35E-03	306.7	4.39E-03	-5.89E-03
28	39.6487	-14.431	50.28	5.82E-03	306.3	3.45E-03	-4.69E-03
29	39.6487	-14.431	54.47	4.15E-03	306.	2.44E-03	-3.36E-03
30	39.6487	-14.431	58.66	2.33E-03	305.7	1.36E-03	-1.89E-03
END	39.6487	-14.431	62.85	0	0	0	0
GND	79.2035	-28.8277	0	8.21E-04	56.8	4.49E-04	6.87E-04
32	79.2035	-28.8277	4.19	4.45E-04	56.7	2.44E-04	3.72E-04

33	79.2035	-28.8277	8.38	2.21E-04	55.9	1.24E-04	1.83E-04
34	79.2035	-28.8277	12.57	4.29E-05	46.1	2.97E-05	3.09E-05
35	79.2035	-28.8277	16.76	1.04E-04	244.4	-4.5E-05	-9.4E-05
36	79.2035	-28.8277	20.95	2.21E-04	242.2	-1.03E-04	-1.95E-04
37	79.2035	-28.8277	25.14	3.1E-04	242.1	-1.45E-04	-2.74E-04
38	79.2035	-28.8277	29.33	3.74E-04	242.4	-1.73E-04	-3.32E-04
39	79.2035	-28.8277	33.52	4.13E-04	242.9	-1.88E-04	-3.68E-04
40	79.2035	-28.8277	37.71	4.29E-04	243.5	-1.91E-04	-3.84E-04
41	79.2035	-28.8277	41.9	4.2E-04	244.2	-1.83E-04	-3.79E-04
42	79.2035	-28.8277	46.09	3.89E-04	244.9	-1.65E-04	-3.53E-04
43	79.2035	-28.8277	50.28	3.35E-04	245.7	-1.38E-04	-3.05E-04
44	79.2035	-28.8277	54.47	2.58E-04	246.5	-1.03E-04	-2.36E-04
45	79.2035	-28.8277	58.66	1.55E-04	247.3	-5.98E-05	-1.43E-04
END	79.2035	-28.8277	62.85	0	0	0	0
GND	-25.3926	-33.6971	0	7.9E-04	17.9	7.51E-04	2.43E-04
47	-25.3926	-33.6971	4.19	4.28E-04	17.9	4.07E-04	1.32E-04
48	-25.3926	-33.6971	8.38	2.13E-04	18.	2.02E-04	6.58E-05
49	-25.3926	-33.6971	12.57	4.02E-05	18.8	3.8E-05	1.3E-05
50	-25.3926	-33.6971	16.76	1.E-04	197.4	-9.55E-05	-2.99E-05
51	-25.3926	-33.6971	20.95	2.12E-04	197.6	-2.02E-04	-6.41E-05
52	-25.3926	-33.6971	25.14	2.99E-04	197.7	-2.84E-04	-9.06E-05
53	-25.3926	-33.6971	29.33	3.6E-04	197.7	-3.43E-04	-1.1E-04
54	-25.3926	-33.6971	33.52	3.98E-04	197.8	-3.79E-04	-1.21E-04
55	-25.3926	-33.6971	37.71	4.12E-04	197.8	-3.92E-04	-1.26E-04
56	-25.3926	-33.6971	41.9	4.04E-04	197.9	-3.85E-04	-1.24E-04
57	-25.3926	-33.6971	46.09	3.74E-04	198.	-3.56E-04	-1.16E-04
58	-25.3926	-33.6971	50.28	3.22E-04	198.1	-3.06E-04	-9.99E-05
59	-25.3926	-33.6971	54.47	2.47E-04	198.2	-2.35E-04	-7.72E-05
60	-25.3926	-33.6971	58.66	1.48E-04	198.3	-1.41E-04	-4.65E-05
END	-25.3926	-33.6971	62.85	0	0	0	0
GND	14.2562	-48.1281	0	8.23E-04	55.1	4.71E-04	6.75E-04
62	14.2562	-48.1281	4.19	4.46E-04	55.	2.56E-04	3.65E-04
63	14.2562	-48.1281	8.38	2.23E-04	54.1	1.31E-04	1.81E-04
64	14.2562	-48.1281	12.57	4.55E-05	43.9	3.28E-05	3.16E-05
65	14.2562	-48.1281	16.76	1.01E-04	243.8	-4.45E-05	-9.04E-05
66	14.2562	-48.1281	20.95	2.16E-04	241.2	-1.04E-04	-1.89E-04
67	14.2562	-48.1281	25.14	3.04E-04	241.	-1.47E-04	-2.66E-04
68	14.2562	-48.1281	29.33	3.66E-04	241.3	-1.76E-04	-3.21E-04
69	14.2562	-48.1281	33.52	4.05E-04	241.8	-1.91E-04	-3.57E-04
70	14.2562	-48.1281	37.71	4.2E-04	242.4	-1.94E-04	-3.72E-04
71	14.2562	-48.1281	41.9	4.11E-04	243.1	-1.86E-04	-3.67E-04
72	14.2562	-48.1281	46.09	3.81E-04	243.8	-1.68E-04	-3.42E-04
73	14.2562	-48.1281	50.28	3.28E-04	244.6	-1.41E-04	-2.96E-04
74	14.2562	-48.1281	54.47	2.52E-04	245.4	-1.05E-04	-2.29E-04
75	14.2562	-48.1281	58.66	1.51E-04	246.1	-6.12E-05	-1.38E-04

END	14.2562	-48.1281	62.85	0	0	0	0
GND	53.9033	-62.5579	0	7.93E-03	59.8	3.99E-03	6.85E-03
77	53.9033	-62.5579	4.19	7.84E-03	59.8	3.94E-03	6.78E-03
78	53.9033	-62.5579	8.38	7.7E-03	59.8	3.87E-03	6.65E-03
79	53.9033	-62.5579	12.57	7.48E-03	59.8	3.77E-03	6.46E-03
80	53.9033	-62.5579	16.76	7.19E-03	59.7	3.62E-03	6.21E-03
81	53.9033	-62.5579	20.95	6.83E-03	59.7	3.45E-03	5.9E-03
82	53.9033	-62.5579	25.14	6.41E-03	59.6	3.24E-03	5.53E-03
83	53.9033	-62.5579	29.33	5.92E-03	59.5	3.E-03	5.1E-03
84	53.9033	-62.5579	33.52	5.37E-03	59.5	2.73E-03	4.63E-03
85	53.9033	-62.5579	37.71	4.77E-03	59.4	2.43E-03	4.11E-03
86	53.9033	-62.5579	41.9	4.12E-03	59.2	2.11E-03	3.54E-03
87	53.9033	-62.5579	46.09	3.42E-03	59.1	1.76E-03	2.94E-03
88	53.9033	-62.5579	50.28	2.68E-03	59.	1.38E-03	2.3E-03
89	53.9033	-62.5579	54.47	1.89E-03	58.8	9.79E-04	1.62E-03
90	53.9033	-62.5579	58.66	1.05E-03	58.7	5.45E-04	8.96E-04
END	53.9033	-62.5579	62.85	0	0	0	0

Table 4 -

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KYPA
1230 kHz
1 Kw tower 2 Driven
Tower 1 shorted,
others detuned

GEOMETRY
Dimensions in meters
Environment: perfect ground

wire	caps	Radius	Angle	Z	radius	segs
1	2	0	0	0	.35	15
		0	0	62.5		
2	2	42.1933	340.	0	.35	15
		42.1933	340.	62.5		
3	2	84.2866	340.	0	.35	15
		84.2866	340.	62.5		
4	2	42.1933	233.	0	.35	15
		42.1933	233.	62.5		
5	2	50.1951	286.5	0	.35	15
		50.1951	286.5	62.5		
6	2	82.5776	310.75	0	.35	15
		82.5776	310.75	62.5		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.19	1	4.19
segment/radius ratio	1	11.9714	1	11.9714
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (KHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum

1	1,230.	0	1	.0171905	.0171905

Sources

source	node	sector	magnitude	phase	type
1	16	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	0	.075	0	0
2	31	0	0	.075	0	0
3	46	0	0	.075	0	0
4	61	0	0	.075	0	0
5	76	1.E+07	0	0	0	0

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IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 16, sector 1							
1,230.	44.974	31.893	55.134	35.3	1.951	-9.8356	-.47624

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CURRENT peak
Frequency = 1230 KHz
Input power = 1,000. watts
Efficiency = 100. %
coordinates in meters

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	.381271	34.7	.31343	.217092
2	0	0	4.19	.206555	34.6	.170067	.117227
3	0	0	8.38	.10292	33.7	.0856433	.0570771
4	0	0	12.57	.0202117	23.1	.0185907	7.93E-03
5	0	0	16.76	.0481134	223.1	-.0351323	-.0328728
6	0	0	20.95	.101959	220.6	-.077367	-.0664082
7	0	0	25.14	.143397	220.5	-.109083	-.0930787
8	0	0	29.33	.172965	220.8	-.130945	-.113006
9	0	0	33.52	.191083	221.3	-.143507	-.126168

10	0	0	37.71	.198087	222.	-.14729	-.132454
11	0	0	41.9	.194256	222.7	-.142803	-.131692
12	0	0	46.09	.179799	223.4	-.130534	-.123648
13	0	0	50.28	.154792	224.2	-.110891	-.107998
14	0	0	54.47	.118994	225.	-.0840704	-.084213
15	0	0	58.66	.0714051	225.9	-.0497278	-.0512429
END	0	0	62.85	0	0	0	0
GND	39.6487	-14.431	0	6.66862	324.7	5.43964	-3.85756
17	39.6487	-14.431	4.19	6.80581	322.7	5.41247	-4.12603
18	39.6487	-14.431	8.38	6.80673	321.6	5.33115	-4.23207
19	39.6487	-14.431	12.57	6.71953	320.7	5.19639	-4.26023
20	39.6487	-14.431	16.76	6.54964	319.9	5.00936	-4.21949
21	39.6487	-14.431	20.95	6.30069	319.2	4.77166	-4.1146
22	39.6487	-14.431	25.14	5.97594	318.6	4.48532	-3.94889
23	39.6487	-14.431	29.33	5.57878	318.1	4.15276	-3.72524
24	39.6487	-14.431	33.52	5.11298	317.6	3.77682	-3.44648
25	39.6487	-14.431	37.71	4.58243	317.2	3.36042	-3.11549
26	39.6487	-14.431	41.9	3.99113	316.7	2.90664	-2.73506
27	39.6487	-14.431	46.09	3.3426	316.3	2.41822	-2.30763
28	39.6487	-14.431	50.28	2.63902	316.	1.89695	-1.83467
29	39.6487	-14.431	54.47	1.87877	315.6	1.34197	-1.31487
30	39.6487	-14.431	58.66	1.05074	315.2	.745779	-.740175
END	39.6487	-14.431	62.85	0	0	0	0
GND	79.2035	-28.8277	0	.389081	32.8	.327216	.210509
32	79.2035	-28.8277	4.19	.210759	32.6	.177477	.113672
33	79.2035	-28.8277	8.38	.104918	31.8	.0891358	.0553414
34	79.2035	-28.8277	12.57	.0203164	22.2	.018811	7.67E-03
35	79.2035	-28.8277	16.76	.049388	220.3	-.0376914	-.0319146
36	79.2035	-28.8277	20.95	.104516	218.1	-.0822611	-.0644724
37	79.2035	-28.8277	25.14	.146959	218.	-.115871	-.0903925
38	79.2035	-28.8277	29.33	.177267	218.3	-.139173	-.109793
39	79.2035	-28.8277	33.52	.195856	218.8	-.1527	-.122646
40	79.2035	-28.8277	37.71	.203059	219.4	-.156953	-.128837
41	79.2035	-28.8277	41.9	.199154	220.1	-.152417	-.128184
42	79.2035	-28.8277	46.09	.184346	220.8	-.139559	-.120444
43	79.2035	-28.8277	50.28	.158713	221.6	-.118767	-.105282
44	79.2035	-28.8277	54.47	.12201	222.3	-.0902013	-.0821596
45	79.2035	-28.8277	58.66	.0732129	223.1	-.053449	-.0500333
END	79.2035	-28.8277	62.85	0	0	0	0
GND	-25.3926	-33.6971	0	.317592	1.3	.317506	7.37E-03
47	-25.3926	-33.6971	4.19	.172067	1.3	.17202	4.03E-03
48	-25.3926	-33.6971	8.38	.0857581	1.4	.0857319	2.12E-03
49	-25.3926	-33.6971	12.57	.0165824	2.3	.0165696	6.53E-04
50	-25.3926	-33.6971	16.76	.0395036	180.7	-.0395003	-5.09E-04
51	-25.3926	-33.6971	20.95	.0842651	181.	-.0842527	-1.44E-03

52	-25.3926	-33.6971	25.14	.118569	181.1	-.118548	-2.19E-03
53	-25.3926	-33.6971	29.33	.142933	181.1	-.142905	-2.8E-03
54	-25.3926	-33.6971	33.52	.157732	181.2	-.157698	-3.28E-03
55	-25.3926	-33.6971	37.71	.163276	181.3	-.163235	-3.62E-03
56	-25.3926	-33.6971	41.9	.159833	181.4	-.159788	-3.81E-03
57	-25.3926	-33.6971	46.09	.147628	181.5	-.14758	-3.78E-03
58	-25.3926	-33.6971	50.28	.126792	181.6	-.126744	-3.5E-03
59	-25.3926	-33.6971	54.47	.0972098	181.7	-.0971668	-2.89E-03
60	-25.3926	-33.6971	58.66	.0581591	181.8	-.0581294	-1.86E-03
END	-25.3926	-33.6971	62.85	0	0	0	0
GND	14.2562	-48.1281	0	.391674	31.5	.333943	.204673
62	14.2562	-48.1281	4.19	.212276	31.4	.18122	.110546
63	14.2562	-48.1281	8.38	.106052	30.6	.0913289	.0539071
64	14.2562	-48.1281	12.57	.0213904	21.	.019966	7.67E-03
65	14.2562	-48.1281	16.76	.0482202	219.5	-.037202	-.030679
66	14.2562	-48.1281	20.95	.103046	217.1	-.0821644	-.0621892
67	14.2562	-48.1281	25.14	.145136	217.	-.115978	-.0872562
68	14.2562	-48.1281	29.33	.1751	217.3	-.139363	-.106011
69	14.2562	-48.1281	33.52	.193416	217.8	-.152911	-.11844
70	14.2562	-48.1281	37.71	.200463	218.4	-.157163	-.12444
71	14.2562	-48.1281	41.9	.196549	219.1	-.152631	-.123837
72	14.2562	-48.1281	46.09	.1819	219.8	-.139786	-.116394
73	14.2562	-48.1281	50.28	.156596	220.5	-.119011	-.101779
74	14.2562	-48.1281	54.47	.12039	221.3	-.0904428	-.0794598
75	14.2562	-48.1281	58.66	.0722541	222.1	-.0536368	-.0484122
END	14.2562	-48.1281	62.85	0	0	0	0
GND	53.9033	-62.5579	0	2.32E-05	110.9	-8.26E-06	2.17E-05
77	53.9033	-62.5579	4.19	.181323	200.9	-.169362	-.064764
78	53.9033	-62.5579	8.38	.28395	201.	-.265027	-.101924
79	53.9033	-62.5579	12.57	.360977	201.2	-.336622	-.130346
80	53.9033	-62.5579	16.76	.417597	201.3	-.389014	-.151841
81	53.9033	-62.5579	20.95	.456193	201.5	-.42445	-.167195
82	53.9033	-62.5579	25.14	.478033	201.7	-.444149	-.176769
83	53.9033	-62.5579	29.33	.483983	201.9	-.448966	-.180747
84	53.9033	-62.5579	33.52	.47475	202.2	-.43962	-.179228
85	53.9033	-62.5579	37.71	.450972	202.5	-.41678	-.17225
86	53.9033	-62.5579	41.9	.413238	202.8	-.381087	-.159807
87	53.9033	-62.5579	46.09	.36204	203.1	-.333097	-.141842
88	53.9033	-62.5579	50.28	.297687	203.4	-.273211	-.118209
89	53.9033	-62.5579	54.47	.219968	203.7	-.201355	-.0885537
90	53.9033	-62.5579	58.66	.127416	204.1	-.116315	-.0520176
END	53.9033	-62.5579	62.85	0	0	0	0

Tower Impedance Transformation

The model impedance at the base of the tower must be modified by the circuit effects of the antenna stray capacitance, the inductance of the feed connection to the tower, any static drain inductors, and other identified stray reactance in the system that must be considered. In this case the capacitance to ground of the components and interconnecting tube within the KYPA and KBLA multiplexing filters, must be added.

A table of these values, from the measured impedances above, and sketch of the evaluated circuit is shown below:

Tower	C Stray (Model)	Measured Prematch Capacitor	Measured Feed Inductance	Static Drain	Measured Diplex Filter Stray Capacitance
1 (KBLA twr 6)	50 pF	872 pF	6.06 uH	> 10000 Ω	138 pf
2	100 pF	833 pF	5.0 uH	> 10000 Ω	146 pF

Table 5 and 6 are the spreadsheets used in analysis of permitted ranges for modeling parameters and performing the network calculations. The actual antenna impedance is transformed to the values that are measured at the J-Plugs by using network analysis. This is to take into account the impedance transforming effects of the antenna shunt impedance, the series reactance tower mounted capacitor and the tower-to-ATU feed system, the static drain or lighting choke, and any other identifiable impedance in the circuit before the point of current and impedance measurement.

Antenna System Proof of Performance
Method of Moments Modeling
KYPA – Los Angeles, CA
Multicultural Radio Broadcasters Licensee, LLC
November 2011

Table 5 Tower 1 (KBLA Tower6) Comparison of Measured and Modeled Impedance

MOM Spreadsheet	Table 5	FCC Rules Section 73.151(c) parameters					
Call Sign	KYPA Twr1						
Frequency	1230 kHz	Base Capacitance	50 pF			-2587.9 Ohms	
		Lead Inductance	6.06 uH	46.83		2.0 Ohms	
		Diplexer Capacitance	146 pF			-886.3 Ohms	
Tower Height	90.0 degrees	Face Width	24 In	# of Faces		3	
Height	60.959 Meters	Effective Diameter	0.291 meters				
Min Height	45.719 Meters	Min Diameter	0.233 meters	Max Segs		32.72	
Max Height	76.199 Meters	Max Diameter	0.437 meters	Max Segs		17.45	

Min Segments	12

MOM Z (open)	44.97	R Ohms	31.89	J Ohms
Transformed Z	49.63	R Ohms	32.11	J Ohms
Measured Z	47.39	R Ohms	34.39	J Ohms
Error Value				
MOM Z (short)	51.67	R Ohms	51.85	J Ohms
Transformed Z	60.71	R Ohms	53.37	J Ohms
Measured Z	60.75	R Ohms	51.63	J Ohms
Error Value				

From Table 5 it can be seen that the model of Table 1 and 2 have measured impedance (Measured Z) that match the modeled - transformed impedance (Transformed Z) for Tower 1 when Tower 2 is shorted and when Tower 2 is open within +/-2 Ohms and +/- 4 %, of resistance and reactance. This meets the requirements of §73.151(c)(2)(ii).

Table 6 - Tower 2 Open and Short Model Impedance Comparison

MOM Spreadsheet Table 6 FCC Rules Section 73.151(c) parameters
Call Sign KYPA Twr2

Frequency	1230 kHz	Base Capacitance	150 pF				-862.6 Ohms
		Lead Inductance	5 uH	38.64			6.0 Ohms
		Diplexer Capacitance	138 pF				-937.6 Ohms
Tower Height	90.0 degrees	Face Width	24 In		# of Faces	3	
Height	60.959 Meters	Effective Diameter	0.291 meters				
Min Height	45.719 Meters	Min Diameter	0.233 meters		Max Segs	32.72	
Max Height	76.199 Meters	Max Diameter	0.437 meters		Max Segs	17.45	
Min Segments	12						

MOM Z (open)	44.67	R Ohms	32.59	J Ohms
Transformed Z	52.03	R Ohms	36.04	J Ohms
Measured Z	52.76	R Ohms	35.49	J Ohms
Error Value =				
MOM Z (short)	51.63	R Ohms	50.71	J Ohms
Transformed Z	65.4	R Ohms	55.46	J Ohms
Measured Z	66.97	R Ohms	54.01	J Ohms
Error Value =				

From Table 6 it can be seen that the model of Table 3 and 4 have measured impedance (Measured Z) that match the modeled - transformed impedance (Transformed Z) for Tower 2 when Tower 1 is shorted and when Tower 1 is open within +/-2 Ω and +/- 4 %, of resistance and reactance. This meets the requirements of §73.151(c)(2)(ii).

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Antenna System Proof of Performance
Method of Moments Modeling
KYPA – Los Angeles, CA
Multicultural Radio Broadcasters Licensee, LLC
November 2011

Sampling System Measurements

The sampling system for KYPA consists of two Delta Electronics TCT-3 toroidal current transformers, sampling the current in the line immediately on the tower side of the J plugs at the location where the antenna impedance measurements were made. The sample signals are transmitted through two lengths of Andrew LDF2-50 solid outer conductor coaxial cables, buried from the tower ATU to the transmitter building. The lines were measured using a with the equipment listed above, utilizing direct coaxial connection from the bridge to the cable using coaxial adapters. This sample system meets the requirements of Section 73.68(a) of the rules.

Measurements were made at the antenna monitor end of the cables. The resonant frequency of the cables are noted below with the tower ends open and shorted. The measurements were made with an AEA Technology VIA Bravo II network analyzer serial number 21 calibrated against a precision 50 ohm resistor before the measurements were made.

The results are shown below:

Tower Sample Line	Open Circuit Resonance	Short Circuit Resonance	Electrical Length at 1230 kHz	Open /Short Difference
1 (KBLA Tower 6)	592kHz /1783kHz	1185 kHz	186.7 deg 186.3	0.21 deg
2	592kHz /1783kHz	1186 kHz	187.7 deg	0.21 deg

The measurements above show that there is no difference in line lengths to the accuracy of measurement. Since the lines are exposed to identical environmental conditions, there should be no seasonal variation of indications from this source.

The characteristic impedance of the sample lines was measured using the same equipment. The frequency was set to the geometric mean of the open and short circuit resonance frequencies. The reactance measured at this frequency is equal to the characteristic impedance of the line.

Sample Line	3/8 λ Frequency	Measured Frequency	Characteristic Impedance	5/8 λ Frequency	Measurement Freq	Char. Impedance
1	889.4 kHz	889 kHz	49.7 Ohms	1.482.3 kHz	1482 kHz	49.9 Ω
2	889.4 kHz	889 kHz	49.5 Ohms	1.482.3 kHz	1482 kHz	49.7 Ω

The sample lines were reconnected to the TCT sampling transformers, and the impedance of the sample system was measured at the station carrier frequency of 1230 kHz to provide a reference standard to establish that the sample system is undamaged for periodic verification.

Tower Sample Line	Measurement Frequency	AEA Network Analyzer Reading
1	1230 kHz	50.2 + J0.0 Ω
2	1230 kHz	49.9 + J0.0 Ω

Operating Parameters Calculation

The model of the array developed above, matching the measured base impedance was used for directional antenna calculations. Complex voltage values for sources located at the same feed point location used in the individual antenna model calculations at each tower of the array were used to develop the current moment sums for the towers which when normalized, equated to the theoretical field parameters of the target directional antenna pattern.

These voltage sources were then used to establish the tower base input currents developed when the correct theoretical field parameters are established. The actual drive point impedance at the base of each tower was also calculated by the complex division of base drive voltage and the base drive current. The results of this method of moments synthesis of array parameters as calculated using *Expert MININEC Broadcast Professional* is shown in Table 7.

Table 7 Calculation of Daytime Antenna Pattern Base Drive Parameters

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MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1230 KHz

tower	field ratio magnitude	phase (deg)
1	.001	0
2	1.	0
3	.001	0
4	.001	0
5	.001	0
6	.4	154.

VOLTAGES AND CURRENTS - peak

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	269.459	5.5	.603924	97.1
16	477.456	53.8	7.72181	4.7
31	185.144	4.2	.408597	95.4
46	180.103	337.	.401	66.
61	186.061	4.2	.406641	95.5
76	154.286	293.9	3.22131	149.5

Sum of square of source currents = 70.8611
Total power = 1,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00454646	-.0145728
Y(1, 2)	.00171889	.00732931
Y(1, 3)	.000616892	-.00024672
Y(1, 4)	.00166329	.007069
Y(1, 5)	-.000581844	.00307164

Y(1, 6)	-.000677555	-.000227386
Y(2, 1)	.00171889	.00732931
Y(2, 2)	.00178034	-.016969
Y(2, 3)	.00159864	.00732457
Y(2, 4)	-.000426188	.000208863
Y(2, 5)	-.000409589	.00542014
Y(2, 6)	-.00058164	.00306373
Y(3, 1)	.000616892	-.000246719
Y(3, 2)	.00159864	.00732457
Y(3, 3)	.00578914	-.0137085
Y(3, 4)	-.000548962	-.000312658
Y(3, 5)	-.000427585	.000211216
Y(3, 6)	.00166264	.00707069
Y(4, 1)	.00166329	.00706901
Y(4, 2)	-.000426187	.000208864
Y(4, 3)	-.000548962	-.000312658
Y(4, 4)	.00579886	-.0136867
Y(4, 5)	.00160018	.00730482
Y(4, 6)	.000615995	-.000247458
Y(5, 1)	-.000581845	.00307164
Y(5, 2)	-.000409589	.00542014
Y(5, 3)	-.000427584	.000211216
Y(5, 4)	.00160018	.00730482
Y(5, 5)	.00178397	-.0169538
Y(5, 6)	.0017199	.00732862
Y(6, 1)	-.000677555	-.000227386
Y(6, 2)	-.000581641	.00306373
Y(6, 3)	.00166264	.00707069
Y(6, 4)	.000615995	-.000247457
Y(6, 5)	.0017199	.00732862
Y(6, 6)	.00455014	-.0145749

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	41.6293	32.5725
Z(1, 2)	27.4438	-14.8179
Z(1, 3)	.544128	-26.4156
Z(1, 4)	30.8043	-13.2419
Z(1, 5)	23.7803	-20.3868
Z(1, 6)	1.18311	-27.9731
Z(2, 1)	27.4438	-14.8179
Z(2, 2)	39.4792	29.0332
Z(2, 3)	28.9309	-14.0209
Z(2, 4)	12.0431	-26.1292
Z(2, 5)	27.2182	-17.4383

Z(2, 6)	23.7905	-20.3896
Z(3, 1)	.544121	-26.4156
Z(3, 2)	28.9309	-14.0209
Z(3, 3)	43.3569	33.6845
Z(3, 4)	-12.0723	-23.4416
Z(3, 5)	12.1018	-26.12
Z(3, 6)	30.8217	-13.2358
Z(4, 1)	30.8043	-13.2419
Z(4, 2)	12.0431	-26.1292
Z(4, 3)	-12.0723	-23.4415
Z(4, 4)	43.3617	33.707
Z(4, 5)	28.8703	-14.0712
Z(4, 6)	.479771	-26.4052
Z(5, 1)	23.7803	-20.3868
Z(5, 2)	27.2182	-17.4383
Z(5, 3)	12.1018	-26.1199
Z(5, 4)	28.8703	-14.0712
Z(5, 5)	39.4698	29.0394
Z(5, 6)	27.4487	-14.8143
Z(6, 1)	1.1831	-27.9731
Z(6, 2)	23.7905	-20.3896
Z(6, 3)	30.8217	-13.2358
Z(6, 4)	.479759	-26.4052
Z(6, 5)	27.4487	-14.8143
Z(6, 6)	41.6368	32.5702

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DESIGN ANALYSIS

Normalization = 50 ohms

Frequency = 1230 KHz

source	resistance (ohms)	reactance (ohms)	VSWR
node 1, sector 1	-12.1833	-446.02	****
node 16, sector 1	40.4314	46.7817	2.8
node 31, sector 1	-9.41602	-453.025	****
node 46, sector 1	7.37951	-449.085	553.5
node 61, sector 1	-10.4516	-457.428	****
node 76, sector 1	-38.9533	27.868	****

total power = 1,000. watts
total power loss = 0 watts
efficiency = 100. %

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Antenna System Proof of Performance
Method of Moments Modeling
KYPA – Los Angeles, CA
Multicultural Radio Broadcasters Licensee, LLC
November 2011

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KYPA - DA-1
1230 kHz
1 Kw
6 towers, 2 towers Active

GEOMETRY
Dimensions in meters
Environment: perfect ground

wire	caps	Radius	Angle	Z	radius	segs
1	2	0	0	0	.35	15
		0	0	62.5		
2	2	42.1933	340.	0	.35	15
		42.1933	340.	62.5		
3	2	84.2866	340.	0	.35	15
		84.2866	340.	62.5		
4	2	42.1933	233.	0	.35	15
		42.1933	233.	62.5		
5	2	50.1951	286.5	0	.35	15
		50.1951	286.5	62.5		
6	2	82.5776	310.75	0	.35	15
		82.5776	310.75	62.5		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.19	1	4.19
segment/radius ratio	1	11.9714	1	11.9714
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,230.	0	1	.0171905	.0171905

Sources

source	node	sector	magnitude	phase	type
1	1	1	269.459	5.5	voltage

2	16	1	477.456	53.8	voltage
3	31	1	185.144	4.2	voltage
4	46	1	180.103	337.	voltage
5	61	1	186.061	4.2	voltage
6	76	1	154.286	293.9	voltage

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IMPEDANCE
normalization = 50.

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CURRENT peak
Frequency = 1230 KHz
Input power = 1,000. watts
Efficiency = 100. %
coordinates in meters

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	.603917	97.1	-.0747502	.599273
2	0	0	4.19	.390048	97.9	-.053477	.386365
3	0	0	8.38	.260938	98.6	-.039228	.257973
4	0	0	12.57	.155059	99.7	-.0261275	.152842
5	0	0	16.76	.0666186	101.9	-.0137382	.0651867
6	0	0	20.95	7.72E-03	254.9	-2.01E-03	-7.45E-03
7	0	0	25.14	.0667681	277.7	8.93E-03	-.0661682
8	0	0	29.33	.113111	279.6	.0188054	-.111537
9	0	0	33.52	.14646	280.7	.0272689	-.143899
10	0	0	37.71	.166961	281.7	.0338932	-.163485
11	0	0	41.9	.174688	282.6	.0381893	-.170463
12	0	0	46.09	.169628	283.5	.0396179	-.164937
13	0	0	50.28	.151627	284.4	.037594	-.146893
14	0	0	54.47	.120198	285.2	.0314567	-.116009
15	0	0	58.66	.0740435	286.	.0203555	-.0711906
END	0	0	62.85	0	0	0	0
GND	39.6487	-14.431	0	7.7218	4.7	7.69637	.626166
17	39.6487	-14.431	4.19	7.96951	2.9	7.95934	.402513
18	39.6487	-14.431	8.38	8.01979	1.9	8.01532	.267915
19	39.6487	-14.431	12.57	7.95506	1.1	7.95349	.157964
20	39.6487	-14.431	16.76	7.78433	.5	7.78405	.0665399
21	39.6487	-14.431	20.95	7.51318	359.9	7.51318	-8.99E-03
22	39.6487	-14.431	25.14	7.14613	359.4	7.14579	-.0698506
23	39.6487	-14.431	29.33	6.68767	359.	6.68665	-.116692
24	39.6487	-14.431	33.52	6.14256	358.6	6.14073	-.149938

25	39.6487	-14.431	37.71	5.5158	358.2	5.51318	-.169891
26	39.6487	-14.431	41.9	4.81237	357.9	4.80912	-.176781
27	39.6487	-14.431	46.09	4.03671	357.6	4.0331	-.170767
28	39.6487	-14.431	50.28	3.19161	357.3	3.18799	-.151873
29	39.6487	-14.431	54.47	2.27519	357.	2.27203	-.119802
30	39.6487	-14.431	58.66	1.27405	356.7	1.27193	-.0734464
END	39.6487	-14.431	62.85	0	0	0	0
GND	79.2035	-28.8277	0	.408595	95.4	-.0385317	.406774
32	79.2035	-28.8277	4.19	.261785	96.	-.0273366	.260354
33	79.2035	-28.8277	8.38	.173546	96.5	-.0196923	.172425
34	79.2035	-28.8277	12.57	.101569	97.1	-.0125295	.100793
35	79.2035	-28.8277	16.76	.0418206	97.7	-5.63E-03	.0414399
36	79.2035	-28.8277	20.95	7.45E-03	277.8	1.02E-03	-7.38E-03
37	79.2035	-28.8277	25.14	.0470584	278.9	7.31E-03	-.0464875
38	79.2035	-28.8277	29.33	.0774644	279.7	.0130686	-.0763541
39	79.2035	-28.8277	33.52	.0989675	280.5	.0180633	-.0973051
40	79.2035	-28.8277	37.71	.111787	281.4	.0220055	-.1096
41	79.2035	-28.8277	41.9	.116093	282.2	.0245656	-.113464
42	79.2035	-28.8277	46.09	.111998	283.1	.0253781	-.109085
43	79.2035	-28.8277	50.28	.0995217	284.	.0240453	-.0965733
44	79.2035	-28.8277	54.47	.0784632	284.9	.0201192	-.0758399
45	79.2035	-28.8277	58.66	.048087	285.7	.0130296	-.0462881
END	79.2035	-28.8277	62.85	0	0	0	0
GND	-25.3926	-33.6971	0	.40099	66.	.162813	.366449
47	-25.3926	-33.6971	4.19	.258169	65.5	.106933	.234982
48	-25.3926	-33.6971	8.38	.172352	64.8	.0732768	.155999
49	-25.3926	-33.6971	12.57	.102406	63.5	.0457692	.091609
50	-25.3926	-33.6971	16.76	.0445281	59.1	.0228975	.0381897
51	-25.3926	-33.6971	20.95	7.09E-03	304.5	4.02E-03	-5.84E-03
52	-25.3926	-33.6971	25.14	.0427004	254.8	-.0111699	-.0412136
53	-25.3926	-33.6971	29.33	.0720739	251.5	-.0228372	-.0683602
54	-25.3926	-33.6971	33.52	.0929169	250.4	-.0311155	-.0875521
55	-25.3926	-33.6971	37.71	.105377	250.	-.0361247	-.0989919
56	-25.3926	-33.6971	41.9	.109628	249.7	-.0379849	-.102837
57	-25.3926	-33.6971	46.09	.105809	249.6	-.0368145	-.0991984
58	-25.3926	-33.6971	50.28	.0939876	249.6	-.0327134	-.0881107
59	-25.3926	-33.6971	54.47	.0740289	249.7	-.0257164	-.0694186
60	-25.3926	-33.6971	58.66	.0453056	249.7	-.0156849	-.0425039
END	-25.3926	-33.6971	62.85	0	0	0	0
GND	14.2562	-48.1281	0	.406649	95.5	-.0390662	.404768
62	14.2562	-48.1281	4.19	.259267	96.2	-.0278384	.257768
63	14.2562	-48.1281	8.38	.171022	96.8	-.0201251	.169834
64	14.2562	-48.1281	12.57	.0993549	97.4	-.0128612	.098519
65	14.2562	-48.1281	16.76	.0401458	98.4	-5.84E-03	.0397188
66	14.2562	-48.1281	20.95	8.45E-03	276.4	9.37E-04	-8.4E-03

67	14.2562	-48.1281	25.14	.0473185	278.9	7.35E-03	-.0467437
68	14.2562	-48.1281	29.33	.0770138	279.9	.0132222	-.0758703
69	14.2562	-48.1281	33.52	.0979024	280.8	.0183	-.0961769
70	14.2562	-48.1281	37.71	.110258	281.7	.0222942	-.107981
71	14.2562	-48.1281	41.9	.114287	282.6	.024873	-.111548
72	14.2562	-48.1281	46.09	.110123	283.5	.025672	-.107089
73	14.2562	-48.1281	50.28	.0977885	284.4	.0242974	-.0947218
74	14.2562	-48.1281	54.47	.0770747	285.3	.0203067	-.0743515
75	14.2562	-48.1281	58.66	.0472381	286.1	.0131355	-.0453751
END	14.2562	-48.1281	62.85	0	0	0	0
GND	53.9033	-62.5579	0	3.22131	149.5	-2.77622	1.63384
77	53.9033	-62.5579	4.19	3.27669	151.2	-2.87234	1.57681
78	53.9033	-62.5579	8.38	3.26988	152.2	-2.89252	1.52493
79	53.9033	-62.5579	12.57	3.22135	153.	-2.86943	1.46405
80	53.9033	-62.5579	16.76	3.13355	153.6	-2.80687	1.39306
81	53.9033	-62.5579	20.95	3.00825	154.1	-2.70719	1.31176
82	53.9033	-62.5579	25.14	2.84711	154.6	-2.5723	1.22037
83	53.9033	-62.5579	29.33	2.65194	155.	-2.40413	1.11934
84	53.9033	-62.5579	33.52	2.42472	155.4	-2.20469	1.00926
85	53.9033	-62.5579	37.71	2.16762	155.7	-1.97611	.890826
86	53.9033	-62.5579	41.9	1.88283	156.	-1.72052	.764756
87	53.9033	-62.5579	46.09	1.57236	156.3	-1.43988	.631724
88	53.9033	-62.5579	50.28	1.23763	156.6	-1.13556	.49217
89	53.9033	-62.5579	54.47	.87827	156.8	-.807299	.345871
90	53.9033	-62.5579	58.66	.489513	157.	-.450737	.190944
END	53.9033	-62.5579	62.85	0	0	0	0

Figure 9A and 9B are results of a *SPICE* simulation of the impedance transformation of the stray values and components between the drive point where the toroidal current transformer monitors the antenna current, and the actual modeled radiation resistance. For each of the towers, I1 represents the current out of the antenna coupler as monitored, C2 is the measured stray static capacitance of the diplexer components to ground, L3 is the tubing connection to the tower C1 is the measured value of the tower mounted pre-match capacitor and L2 is the KBLA sample loop isolation coil. L1 and R1 represent the modeled antenna operating impedance.

Figure 9A is the *SPICE* model for tower 1 and Figure 9B is for tower 2.

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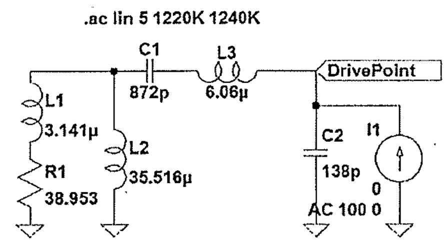
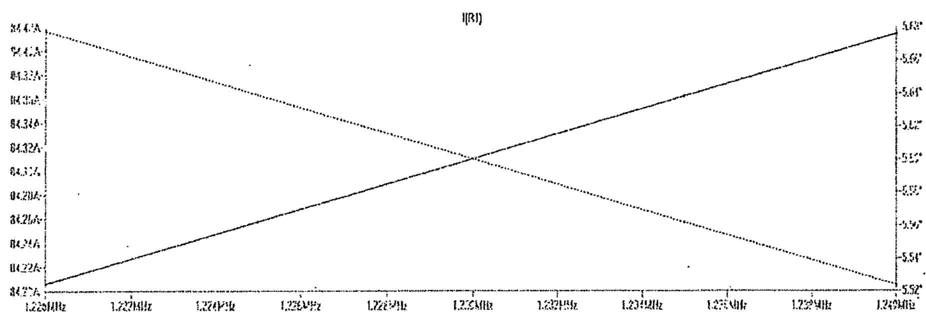
Table 9A – Transformation of Base Current to Current at Sample Tower 1

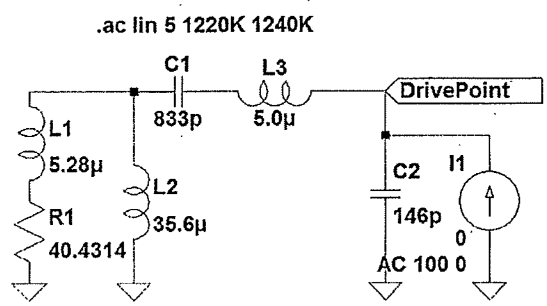


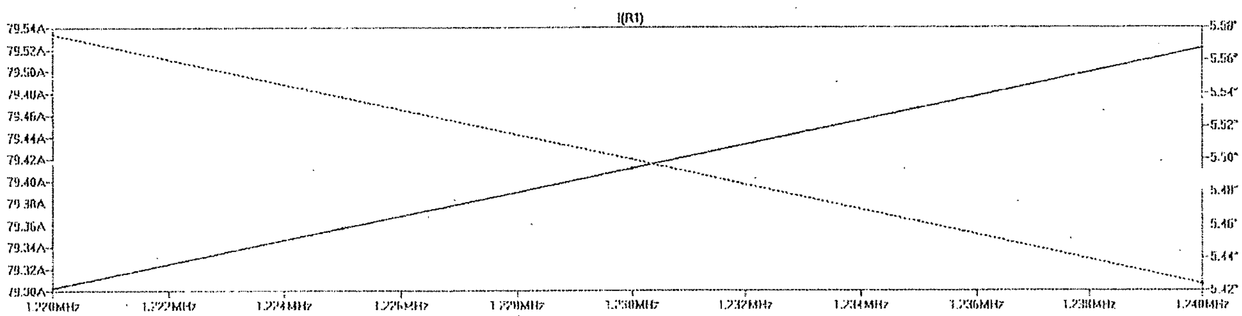


The plotted relationship between the drive point current and the radiation current for tower 1 is:

84.31 A / 100 A = .8431 at an angle of 5.6°

Table 9B – Transformation of Base Current to Current at Sample Tower 2





The plotted relationship between the drive point current and the radiation current for tower 2 is:

79.41 A / 100 A = .7941 at an angle of 5.5°

Tower 1 is the reference, the adjustment that has to be made for strays, the tower mounted capacitors and connecting lines is .9418 and a phase correction of - 0.1°

Table 10 - Antenna Monitor Parameters

			Antenna Monitor Parameters
Tower	**Base current**	Normalized Base Current (Ratio)	Base current ratio corrected for strays and network at bases
1	**3.221 ∡ +149.5° Amps**	**0.417 ∡ +144.8°**	**0.442 ∡ +144.7°**
2	**7.722 ∡ +4.7° Amps**	**1.0 ∡ 0°**	**1.0 ∡ 0°**

Since the sample lines are identical in length, there is no adjustment to the phase due to differential phase delay in the sample system. The relative complex current sampled at the two TCT transformers are the values which should be presented on the antenna monitor.

Diplexing and Intermodulation

Most of the diplexing equipment for KYPA and KBLA has been in place since KYPA began operating from this site in 2009. The filtering includes 1230 kHz Reject filters at KBLA towers 1 and 3-5. At KBLA towers 6 and 2 (KYPA towers 1 and 2) there area pass-reject filters for each station, and a reject filter at the common point in each phasor.

It should be noted that KBLA is currently operating under the terms of an STA to operate using one tower of its directional antenna at reduced power. The day and night antennas of KBLA can be operated in conformance with the terms of its license for testing. Due to a project to modify its antenna for better bandwidth, and verify its performance using computer modeling as described in Section 73.151(c) of the FCC rules, the antenna is operated as described in the STA for normal operation while the project is underway. For the spurious emissions test, the KBLA antenna was operating at full power in day directional mode.

The desired signals of 1580 kHz and 1230 kHz were both in excess of 500 mV/m at the measurement location approximately ½ km from the antenna location. Both stations were operating at full day power. With the filters adjusted, the third order products at 880 kHz, and 2810 kHz were not discernible. The 1930 kHz product was more than 75 db below the KYPA (weaker) carrier below the required value of 73 db. It was more than 80 db below the KBLA signal. A scan of all frequencies below 5 MHz was accomplished using the FIM-41 and no spurious or other undesired signals were noted at the monitoring location excepting the 1930 kHz product, which was within the requirements of the FCC rules and regulations.

The Multicultural Radio Broadcasting Licensee, LLC is the licensee of both KBLA and KYPA. It accepts responsibility for installation and maintenance of all equipment required to provide adequate filters, trap and other equipment to assure that no unacceptable spurious radiation products will be permitted. In the case that Multicultural Radio Broadcasting Licensee, LLC transfers either or both stations to another party, a firm agreement will be made with the other party with respect to responsibility for eliminating any spurious emissions.

Common Point Impedance

Both KYPA and KBLA have common point impedance bridges installed at the common point of the antennas. The impedance for both KBLA directional antennas was checked, and is set to the value of its instrument of authorization. The KYPA antenna common point impedance is set as shown in the FCC Form 302-AM.

Blanketing Interference

Upon full power testing of KYPA, The licensee is unaware of any additional interference problems within the 1 V/m contour of the station. The KYPA power is only 1000 Watts, in comparison with the KBLA power of 50,000 Watts. KYPA has been operating under an STA at 1 kW on this site for over one year. There have been no complaints of blanketing interference with respect to KYPA.

Power Measurement

The day antenna common point impedance was measured at 50.0 +J0 Ohms, which means that the antenna current should be:

$$I=\sqrt{\left(\frac{(1000\ Watts\ X\ 1.08)}{50\text{Ohms}}\right)}=4.65\ Amperes$$

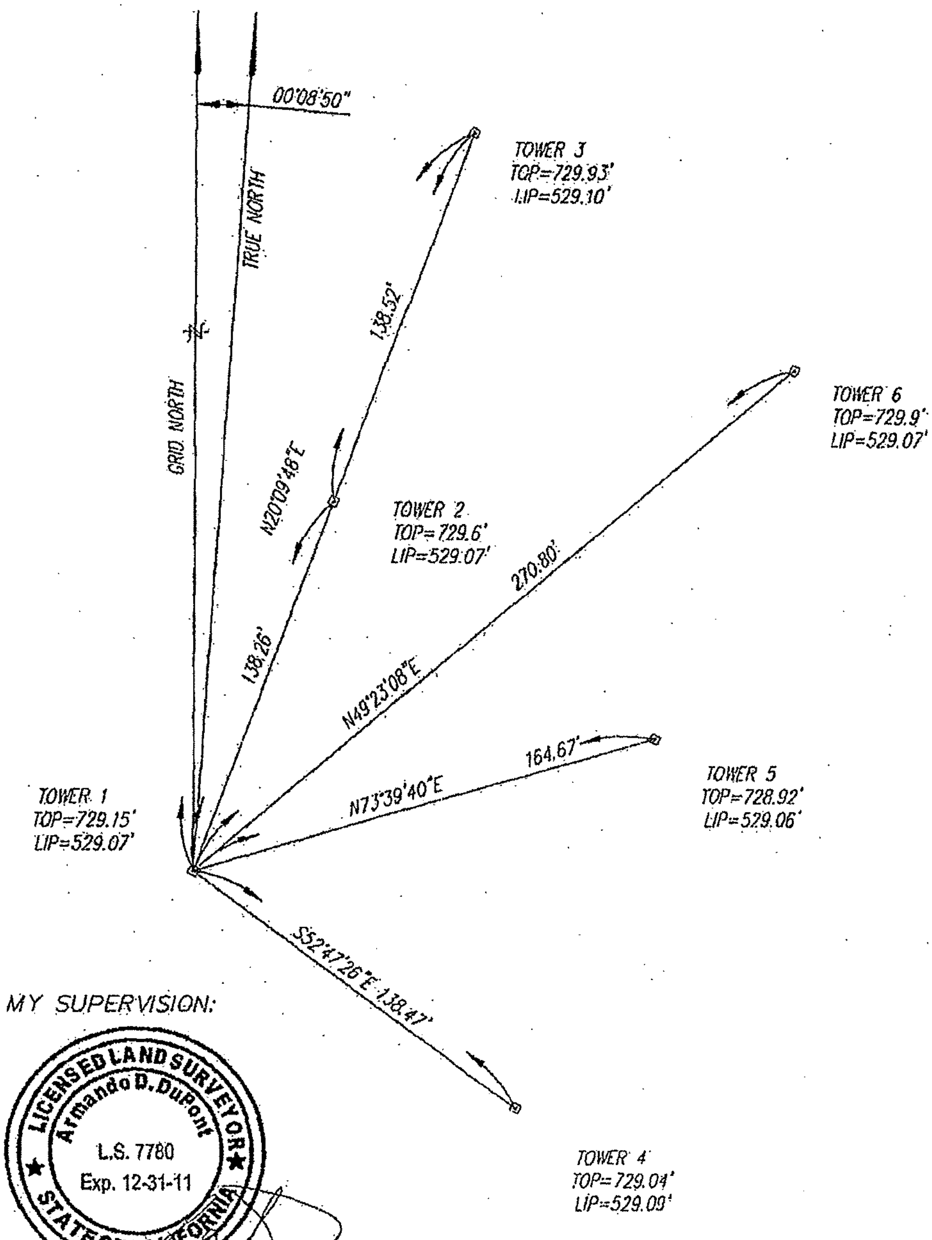
Surveyor Verification of Tower Location

Attached is a copy of the sealed surveyor's certification of the relative location of the towers in the KYPA model. Exhibit A-1 is the relative position of the six towers on the site. Tower 6 on this plot is Tower 1 of KYPA, and Tower 2 of this plot is Tower 2 of KYPA. The relative position of these towers is well within 0.1 degree of bearing and electrical spacing compared to the construction permit values.

Exhibit A-2 shows the geographic coordinates of each tower.

EXHIBIT "A-1"

KBLA-AM TRANSMITTING TOWERS
1700 N. ALVARADO, LOS ANGELES, CA



PREPARED UNDER MY SUPERVISION:

LICENSED LAND SURVEYOR Armando D. DuPont L.S. 7780 Exp. 12-31-11 STATE OF CALIFORNIA

ARMANDO D. DUPONT,
P.L.S. 7780
REG. EXP. DECEMBER 31, 2011

SHEET 1 OF 2

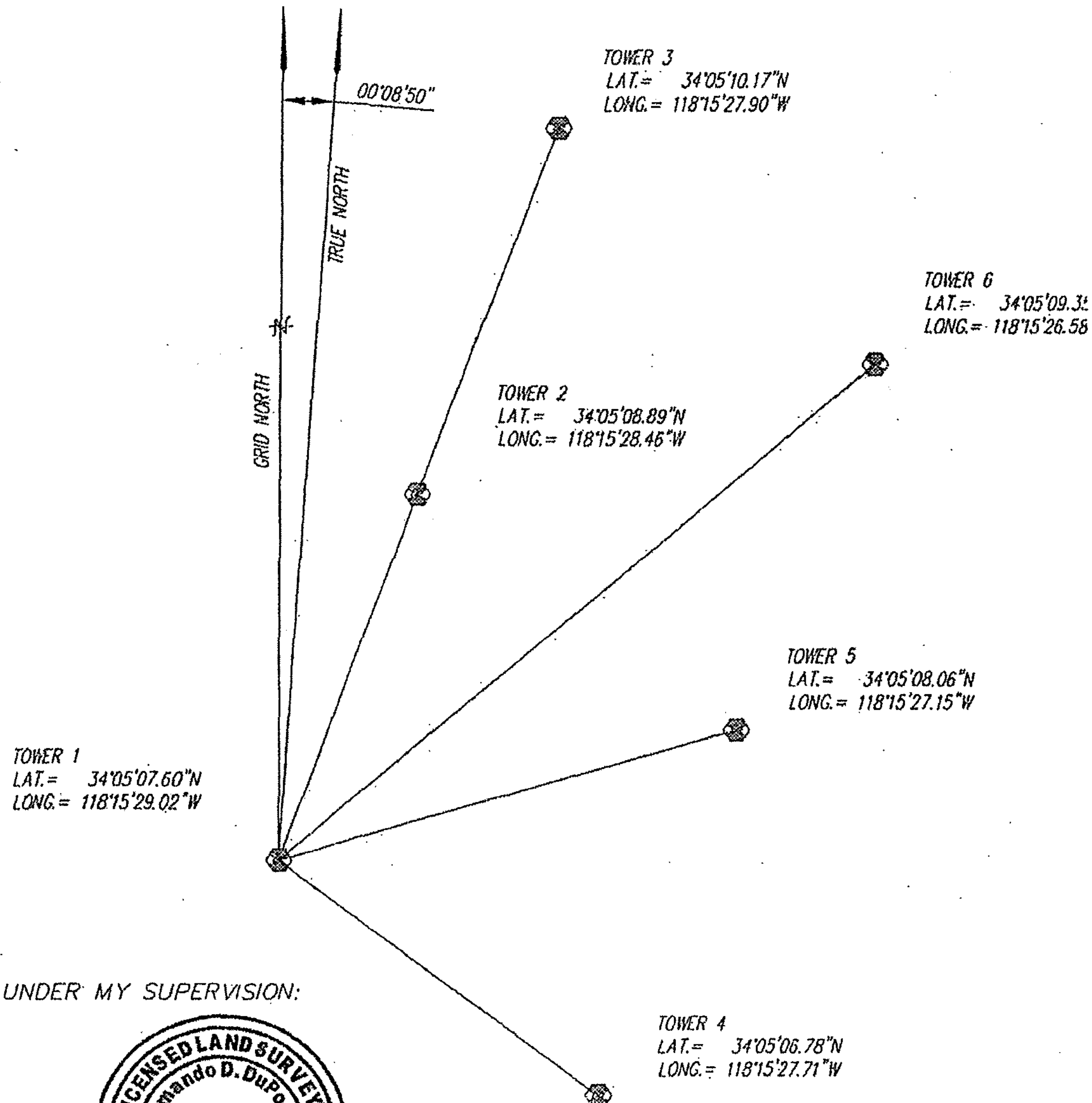
SURVEY DATE: 10/11/11

CALVADA SURVEYING, INC.
411 JENKS CIRCLE, SUITE 205, CORONA, CA. 92880-1782 PHONE: 951-280-9960 FAX: 951-280-9746 www.calvada.com

Job No. 11837
Drawn By: GBM
Date: 10/18/11

EXHIBIT "A-2"

KBLA-AM TRANSMITTING TOWERS
1700 N. ALVARADO, LOS ANGELES, CA



PREPARED UNDER MY SUPERVISION:

LICENSED LAND SURVEYOR
Armando D. DuPont
L.S. 7780
Exp. 12-31-11
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SHEET 2 OF 2

SURVEY DATE: 10/11/11

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Drawn By: GBM
Date: 10/18/11
www.calvada.com

Field Intensity Reference Locations

The computer modeling standards provide for reference measurements for the main lobe of the antenna system and each of the pattern minima.

Table 11 - Reference Field intensity measurements.

These measurements were made with the antenna adjusted for the common point current and antenna parameters listed above. The 4° radial and the 143° radials are the nulls of the pattern, and the 73.5° and 253.5° are substantial major lobes. This simple pattern only requires four reference radials..

KYPA 1230 KHz. Los Angeles, CA

1000 W DA-1

Array Center N34° 5' 9.3" W118° 16' 27.6" (NAD 83)

Array Center N34° 5' 9.2" W118° 16' 24.4" (NAD 27)

Reference Field Strength Measurements

Radial	Point	Distance (km)	Field (mv/m)	Coordinates (NAD 83)		Description
4°	1	1.34	100	34 05 52.5	118 15 24.0	At Stop Sign. Corner of Bancroft and Hidalgo.
	2	1.59	150	34 06 00.3	118 15 23.3	N side Brier Ave on sidewalk in driveway at # 2203.
	3	1.90	150	34 06 10.8	118 15 22.4	On Water Meter cover, S side India St opposite # 2243.
73.5°	1	0.82	305	34 05 16.5	118 14 57.0	NW side Valentine St opposite #2012 at "No Stopping" sign.
	2	0.98	280	34 05 22.5	118 14 38.1	Midway along rock wall SW side in 2000 block of Avon St.
	3	1.33	155	34 05 21.4	118 14 37.8	East End of Avon Park Ter (Right Fork) at curb marker 1408.
143°	1	1.02	205	34 04 42.8	118 15 03.8	South side of Scott Ave opposite fork with Elysian Park Dr.
	2	1.40	100	34 04 33.0	118 14 55.2	W side Stadium Way opp big tree at entrance to Barlow Hospital.
	3	1.65	115	34 04 26.7	118 14 48.8	SE side N Boylson St opposite light pole.
253.5°	1	0.94	215	34 05 00.6	118 16 02.7	Middle of street in front of 1418 McCollum.
	2	1.06	180	34 04 59.6	118 16 07.2	In driveway at 1359 N Benton Way.
	3	1.19	125	34 04 58.5	118 16 12.2	Middle of street in front of 1315 Angelus Ave.

Measurements were made November 27, 2011 by George D Butch using Potomac Instruments FIM-41, SN 1432 calibrated 29 July, 1998.

RF Exposure Guidelines

Exhibit 19 of BP-20050228ACB showed that the existing fencing met all requirements for human exposure to non-ionizing radiation. There have been no changes to the fences since that application was filed, hence the installation meets the FCC requirements with respect to fencing. The site is host to KBLA and KYPA, which are co-owned. Station procedures require that both stations are silenced or reduce power whenever work within the fenced area would cause a risk of excessive exposure.

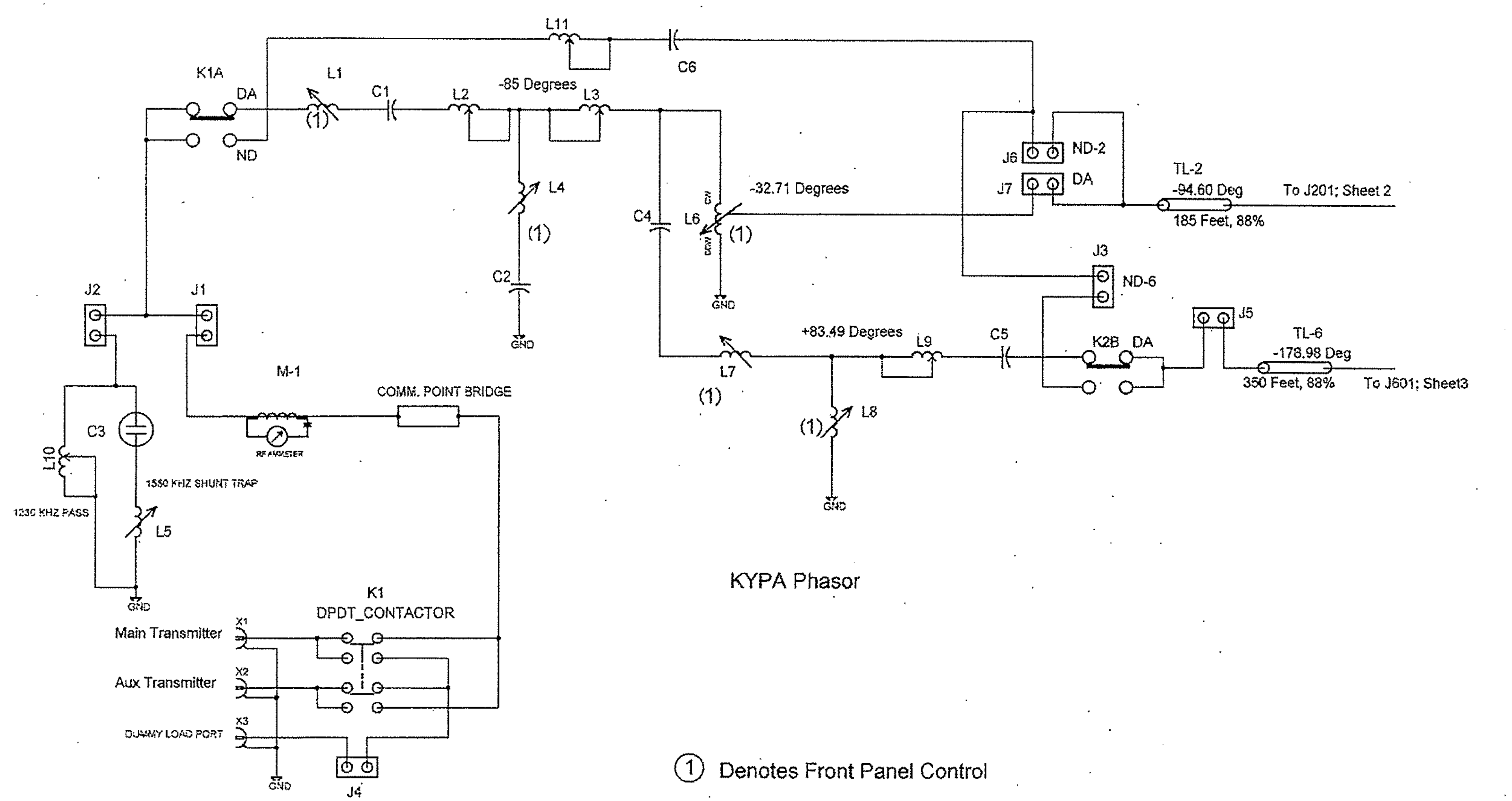
In the case that one of the stations were to be transferred to another owner, the licensee agrees to include in the lease for use of towers mutual agreement to reduce power or silence both stations when work is required in the fenced area that could cause a risk of excessive exposure.

Program Test Authority

This application requests program test authority at 1.0 kW unlimited.

Phasor Schematics

The following pages are schematic drawings of the KYPA Phasing Equipment.

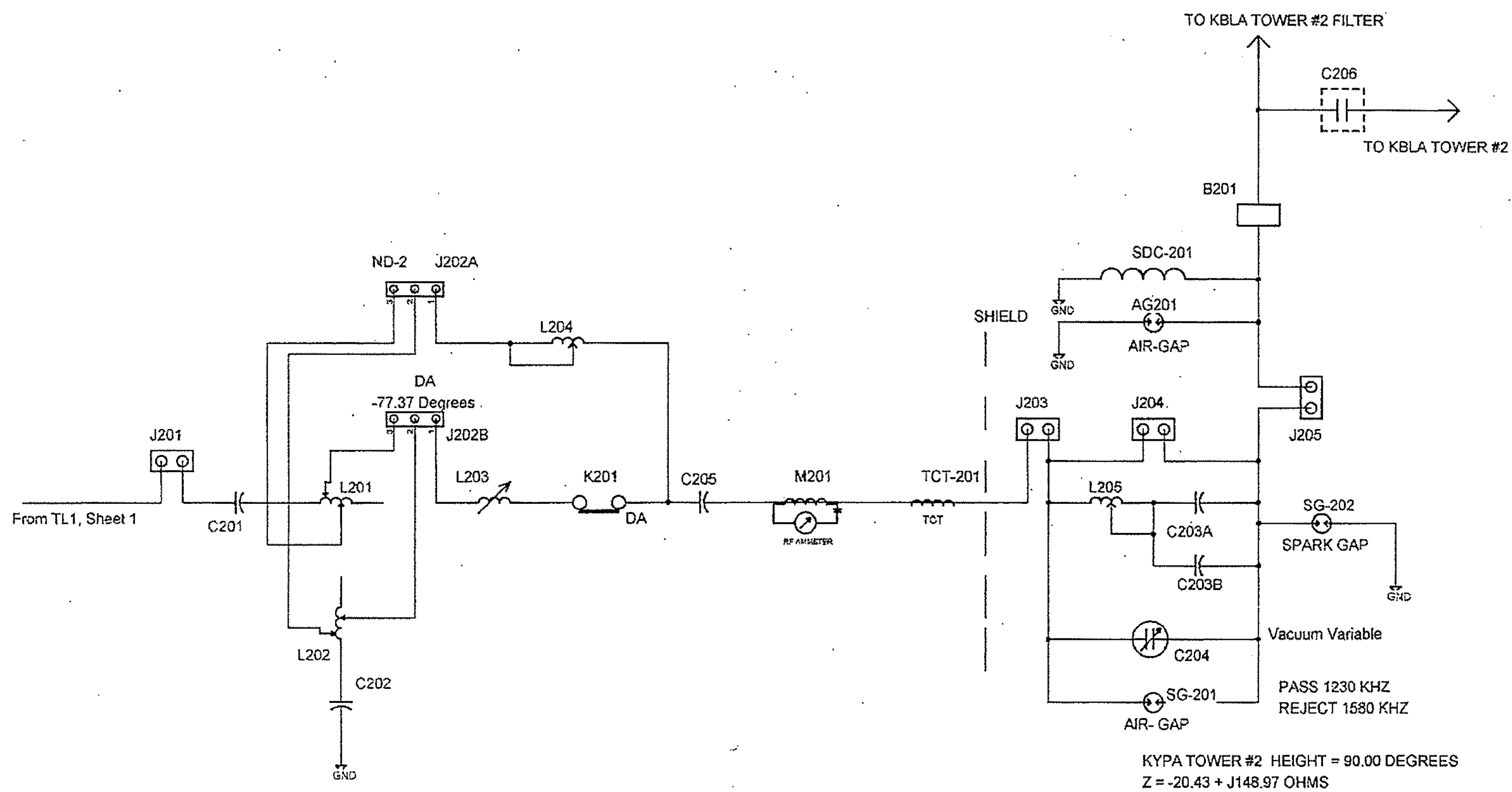


Radiotechniques Manufacturing LLC
Haddon Heights, NJ 08035

TITLE: KYPA Phasor

Document Number: | REV: 1

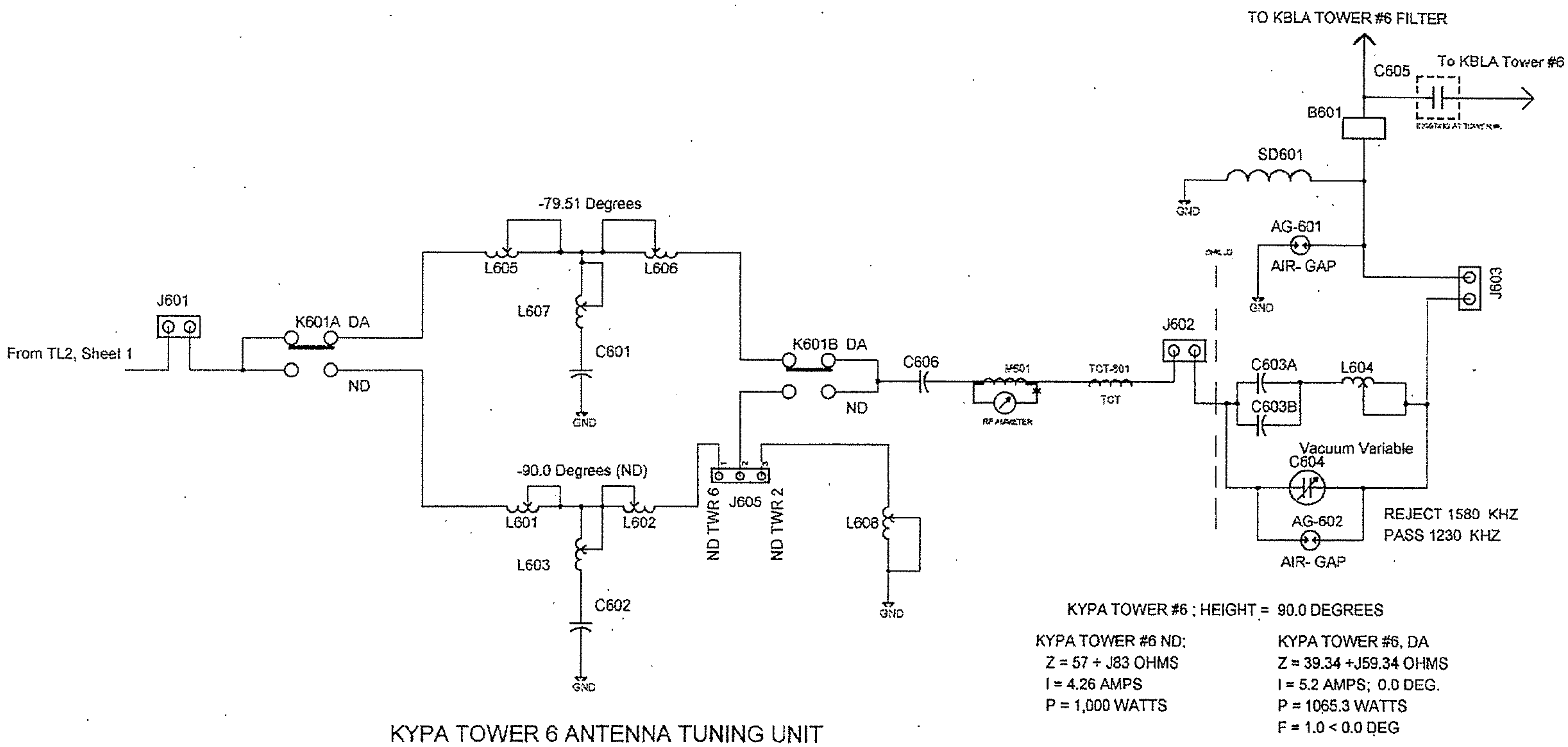
Date: 4/28/2009 03:37:34p | Sheet: 1/3



KYPA TOWER #2 HEIGHT = 90.00 DEGREES
Z = -20.43 + J148.97 OHMS
I = 1.8 AMPS; < -160.3 DEG
P = -65.3 WATTS;
F = 0.4 < +206 DEG

KYPA TOWER 2 ANTENNA TUNING UNIT

Radiotechniques Manufacturing LLC Haddon Heights, NJ 08035	
TITLE: KYPA Phasor	
Document Number:	REV:
Date: 4/28/2009 03:37:34p	Sheet: 2/3



KYPA TOWER 6 ANTENNA TUNING UNIT

Radiotechniques Manufacturing LLC
Haddon Heights, NJ 08035

TITLE: KYPA Phasor

Document Number: REV:

Date: 4/28/2009 03:37:34p Sheet: 3/3

RADIOTECHNIQUES
402 Tenth Avenue • PO Box 367 • Haddon Heights, NJ 08035

Antenna System Proof of Performance
Method of Moments Modeling
KYPA – Los Angeles, CA
Multicultural Radio Broadcasters Licensee, LLC
November 2011

Engineer's Statement

This is to certify that this report has been prepared by myself. It is correct and accurate of my own knowledge, except where stated otherwise, and where that is so, the information is correct to the best of my knowledge and belief.

I further certify that I am a Licensed Professional Engineer in the State of New Jersey, with a BSEE degree from the Newark College of Engineering of NJIT, and that I am regularly engaged in the practice of radio engineering with the firm of Radiotechniques Engineering, LLC, with offices at 402 Tenth Avenue, Haddon Heights, NJ. I am a member of the AFCDE, Senior member of the IEEE and SBE and hold a FCC General Radiotelephone Operator License. My qualifications are a matter of record with the FCC.

Edward A. Schober

November 2011

Edward A. Schober, PE