Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
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FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY
FILE NO. BZ-20170320ANX

SECTION I - APPLICANT FEE INFORMATION

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

MAILING ADDRESS (Line 1) (Maximum 35 characters)
5030 SOUTH RIVER ROAD

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
WEST SACRAMENTO	CA	95691

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
916-371-5101	KJAY	FID:

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
MMR	0001	$ 700.00	

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
	0001	$	

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
	$ 690.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT KJAY, LLC		
MAILING ADDRESS 5030 SOUTH RIVER ROAD		
CITY WEST SACRAMENTO	STATE CA	ZIP CODE 95961

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
KJAY	SACRAMENTO	NA	NA	NA

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. NA

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. NA

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. NA

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)? ☐ Yes ☐ No ☑ Does not apply

If No, explain in an Exhibit. Exhibit No. NA

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. NA

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.
NA

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	
TIFFANY POWELL	Tiffany Powell	
Title	Date	Telephone Number
MANAGING MEMBER	03/16/2017	916-371-5101

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
KJAY, 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
KJAY	NA	1430	UNLIMITED	0.02	0.5

2. Station location

State	City or Town
CA	SACRAMENTO

3. Transmitter location

State	County	City or Town	Street address (or other identification)
CA	SACRAMENTO	WEST SACRAMENTO	5030 SOUTH RIVER ROAD

4. Main studio location

State	County	City or Town	Street address (or other identification)
CA	SACRAMENTO	WEST SACRAMENTO	5030 SOUTH RIVER ROAD

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

State	County	City or Town	Street address (or other identification)
CA	SACRAMENTO	WEST SACRAMENTO	5030 SOUTH RIVER ROAD

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. EXHIBIT 1 - FIG. 2

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
0.66	3.29

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50	50	0	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	0	0	1.000	1.000		
2	+21.6	+21.6	0.985	0.985		
3	-89.4	-89.4	0.910	0.910		
4	-71.2	-71.2	0.960	0.960		

Manufacturer and type of antenna monitor: POTOMAC AM-19 (204); S/N 1006

SECTION III - Page 2

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

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
Uniform cross-section guyed steel tower	51.8	53	54	Exhibit No. NA

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	West Longitude
38 ° 30 ' 17 "	121 ° 33 ' 39 "

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. EXHIBIT 2

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No. EXHIBIT 1 - FIG. 2

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

NA

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

FM antennas and isocoupler added on tower 3 for FM translator K251CA (FID 156726) (see Exhibit 1). Method-of-Moment proof. No change in common point resistance.

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

Name (Please Print or Type)	Signature (check appropriate box below)
MICHAEL D. BROWN	Michael D Brown
Address (include ZIP Code)	Date
3740 SW COMUS ST PORTLAND, OREGON 97219-7418	03/17/2017
	Telephone No. (Include Area Code)
	503-245-6065

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☑ Technical Consultant

☐ Other (specify)

EXHIBIT 1

KJAY, LLC, INCORPORATED

RADIO STATION KJAY
1430 KHZ, 0.02KW, 0.5 KW-LS, DA-1
SACRAMENTO, CALIFORNIA

APPLICATION FOR LICENSE

March 15, 2017

Henry Communications
Napa, California

RADIO STATION KJAY
APPLICATION FOR LICENSE
1430 KHZ, 0.02 KW, 0.50 kW-LS, DA-1
SACRAMENTO, CALIFORNIA

ENGINEERING STATEMENT OF BRIAN J. HENRY

The firm of Henry Communications has been retained by KJAY, LLC, Incorporated, licensee of Radio Station KJAY, Sacramento, California to conduct antenna adjustments and measurements and to prepare the engineering portion of an application for license.

BACKGROUND

Radio Station KJAY is authorized to operate on the 1430 kHz channel with 20 watts of power nighttime and a nominal 500 watts of power daytime using a directional antenna system. This Application for License is being filed to update the license for the directional operation of Radio Station KJAY using Method-of-Moments analysis procedures. Adjustment of the antenna system and a Proof of Performance employing Moment Method Modeling was performed after installation of the FM antenna and associated line for FM translator K251CA and measurements of the array sampling system. The installation of new FM translator facilities as authorized by Construction Permit BMPFT-20160129AUJ has been completed. This application is being filed to comply with the special operating condition and restriction #4 on the Construction Permit.

SITE MODIFICATIONS

The KJAY transmitter site is that as currently licensed. All four towers remain unchanged except for the addition of the FM antenna and line on tower #3. There are no changes to the presently licensed standard radiation pattern. A site survey is therefore not included.

METHOD OF MOMENTS DETAIL

All Moment Method Modeling was done with Expert MININEC Broadcast Professional, Version 23. One wire was used to represent each tower. Towers were driven individually to verify that the model compared to the measured data. Once the model was verified, the directional antenna system was computed. For the directional mode, the complex voltage values for sources located at ground level were computed. These sources produce current moment sums for each tower that when normalized equate to the theoretical filed parameters for each respective tower.

REFERENCE POINT MEASUREMENTS

Reference points were measured at pattern minima and maxima as required by FCC Rules §73.151(c)(3). These points and their measured field intensity as shown in Figure 13.

MEASURING EQUIPMENT

All tower resistance and reactance measurements were made with a Delta Electronics OIB-3 Operating Impedance Bridge. Sample line measurements were made with an Array Solutions VNA2180 vector network analyzer. Before use, tests of known impedances were made to verify operation. All radio frequency measuring equipment was calibrated against precision standards immediately prior to measurement. Standard techniques were employed when using the Delta Electronics OIB-3 to measure the tower base impedances.

All field intensity measurements were made with a Potomac Instruments field strength meter, model FIM-41, serial number 1597, calibrated on April 20, 2015 by Potomac Instruments.

The following measuring equipment was used:

Manufacturer	Model	Serial Number
Array Solutions	VNA2180	5190
Delta Electronics	OIB-3	1045
Potomac Instruments	FIM-41	1597

LIST OF FIGURES

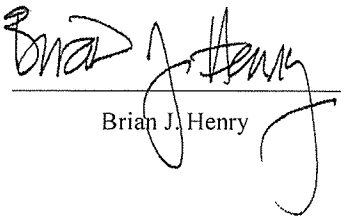
In carrying out these engineering studies, the following attached figures, were prepared by me or under my direct supervision:

1. Engineering specifications of antenna system
2. Antenna system as adjusted
3. Antenna sampling system description and measurements
4. Tower Impedance Measurements vs. Modeled.
5. Moment model parameters
6. Moment model summary for individual towers.
7. Moment model array synthesis (directional operation)
8. Moment model summary for directional operation
9. Derived directional parameters
10. Tower base circuit analysis description
11. Circuit analysis for individual towers
12. Circuit analysis for directional operation
13. Reference field strength measurements

CONCLUSIONS

It is believed that the KJAY antenna system has been adjusted in accordance with all applicable FCC rules and regulations.

Henry Communications
Napa, California



Brian J. Henry

March 15, 2017

RADIO STATION KJAY
APPLICATION FOR LICENSE

ENGINEERING SPECIFICATIONS

A. Transmitter Site Coordinates (NAD 27)

North Latitude	38° 30' 17"
West Longitude	121° 33' 39"

B. Main Studio Location

5030 S. River Road, West Sacramento, California

C. Equipment

Transmitter - Main	Broadcast Electronics, AM-500A
- Auxiliary	Collins, 20V-3
Modulation Monitor	Belar, Type AMM-3
Antenna Monitor	Potomac, Type AM-19 (204) s/n: 1006

D. Operation

Frequency	1430 kHz
Power – daytime	0.5400 kW
nighttime	0.0216 kW
Hours of operation	Unlimited
Mode of operation	DA-1

E. Antenna System

Number of towers	Four
Type of towers	Vertical, uniform cross-section, insulated, guyed
Overall height of radiator above base insulator of all towers	51.8 m
Overall height above ground of all towers	53.0 m
Field ratios and phase of towers	See Figure 1B
Ground System	See Figure 2

RADIO STATION KJAY
APPLICATION FOR LICENSE

ANTENNA SPECIFICATION

Theoretical

	Tower 1	Tower 2	Tower 3	Tower 4
Day / Night Operation				
Field ratio	1.000	1.000	1.000	1.000
Phase	0.0°	+22.0°	-96.0°	-74.0°

Operating

	Tower 1	Tower 2	Tower 3	Tower 4
Day / Night Operation				
Antenna monitor indication	100.0	98.5	91.0	96.0
Antenna monitor ratio	1.000	0.985	0.910	0.960
Phase Indication	0.0°	+21.6°	-89.4°	-71.2°

	Daytime	Nighttime
Measured common point impedance	50.0 Ω +j 0.0	50.0 Ω +j 0.0
Common point current	3.29 A	0.66 A
Common point input power	540 W	21.6 W

RADIO STATION KJAY
APPLICATION FOR LICENSE

ANTENNA SYSTEM AS ADJUSTED

Antenna System Description:

1. The antenna system consists of four (4) uniform, guyed, series excited vertical steel transmitting towers. All towers stand 51.8 meters (88.9°) above their base insulator. Arranged in a parallelogram with Tower 1 as the reference, Tower 2 is spaced 210° on a bearing of 310° true, Tower 3 is spaced 90° on a bearing of 30° true and Tower 4 is spaced 210° on a bearing of 310° true. Tower 3 supports an FM antenna. The feed for this antenna is isolated at the base with a Kintronics isocoupler.

2. The ground system for each tower remains as currently licensed. No changes have been made. It consists of 240 equally spaced, buried, copper radials 51.8 meters in length about the base of each tower. Intersecting radials shortened and bonded to transverse copper straps midway between adjacent towers.

3. The sampling system consists of four (4), Delta Electronics TCT-3 1.0V/A toroidal current transformers. These TCT's are at the tower output of each antenna-tuning unit. These TCT's are connected to a Potomac Instruments AM-19 (204) Antenna Monitor via four (4) equal lengths of Phelps Dodge FXA 38-50 coaxial cable.

Directional Operation (day)

Common Point Impedance: 50.0 +/-j0 Ohms
Common Point Current: 3.29 Amperes
Common Point Power: 540 Watts

Directional Operation (night)

Common Point Impedance: 50.0 +/-j0 Ohms
Common Point Current: 0.66 Amperes
Common Point Power: 21.60 Watts

Directional Antenna Monitor indications are within +/- 5% and +/- 3° of the modeled TCT values.

RADIO STATION KJAY
APPLICATION FOR LICENSE

ANTENNA SAMPLING SYSTEM / MEASUREMENTS

Sampling System Description

The Sampling System consists of Delta Electronics model number TCT-3 toroidal current transformers (TCT) mounted at the base of each tower. The sampling devices are connected to the Antenna Monitor with equal lengths of Phelps Dodge type FXA 38-50 coaxial cable. The Antenna Monitor is a Potomac Instruments model AM-19 (204), serial number 1006.

Sample Line Measurements

Impedance measurements were made of the antenna sampling lines using an Array Solutions VNA2180 Vector Network Analyzer. Measurements were done with the lines open circuited and then connected to the TCTs.

The table below shows the frequencies above and below the carrier frequency where resonance, defined as zero reactance corresponding with low resistance was found. Frequencies of resonance occur at odd multiples of 90 degrees electrical length. The sample line length at the resonant frequency below the carrier frequency, which is the closest one to the carrier frequency, was found to be 90 electrical degrees. The electrical length at carrier frequency appearing in the table below was calculated by ratioing the frequencies.

Electrical Lengths of Sample Lines

Tower Number	Resonant Frequency below 1430 kHz	Resonant Frequency above 1430 kHz	Calculated Electrical Length at 1430 kHz	Measured Impedance (ohms) connected to TCT @ 1430 kHz
1	754.428 kHz	2279.753 kHz	170.6°	48.7 +j 1.7 Ω
2	755.816 kHz	2284.658 kHz	170.3°	49.2 +j 1.7 Ω
3	753.446 kHz	2275.159 kHz	170.8°	48.7 +j 0.3 Ω
4	754.767 kHz	2280.282 kHz	170.5°	48.8 +j 1.8 Ω

To determine the characteristic impedance values of the sample lines, open-circuited measurements were made with the frequencies offset to produce +/- 45 degrees of electrical length from resonance. The characteristic impedance was calculated using the following formula, where R1+j X1 and R2 +jX2 are measured impedances at the +45 and –45 degree offset frequencies, respectively: $Z0=((R1^2 + X1^2)^{1/2} \times (R1^2 + X1^2)^{1/2})^{1/2}$

Characteristic Impedance of Sample Lines

Tower Number	-45° Offset Frequency	-45° Measured Impedance	+45° Offset Frequency	+45° Measured Impedance	Calculated Characteristic Impedance
1	377.214 kHz	0.8 –j 50.9 Ω	1131.642 kHz	4.3 +j 50.0 Ω	50.54 Ω
2	377.908 kHz	0.7 –j 51.3 Ω	1133.724 kHz	4.2 +j 50.6 Ω	51.04 Ω
3	376.723 kHz	0.7 –j 50.5 Ω	1130.169 kHz	3.7 +j 50.0 Ω	50.32 Ω
4	377.384 kHz	0.7 –j 50.9 Ω	1132.151 kHz	4.2 +j 50.5 Ω	50.79 Ω

The maximum variance of the sample line electrical length is 0.5° and the maximum variance in characteristic impedance is 0.72 ohms, both meeting respective 1°and 2 ohm limits of §73.151(c)(2)(i).

Sampling TCT Measurements

Measurements of the Delta Electronics model TCT-3 toroidal current transformers were performed with the Array Solutions VNA2180 Vector Network Analyzer. Measurements are normalized to Tower #1 (reference tower) and are within the manufacturer's magnitude tracking accuracy specification of +/- 1% and phase tracking accuracy specification of +/- 1.0°.

Tower Number	TCT Serial #	Magnitude	Phase
1	15413	1.000	0.00°
2	15419	1.000	-0.26°
3	15417	1.005	+0.02°
4	15415	1.000	-0.22°

Antenna Monitor Measurement

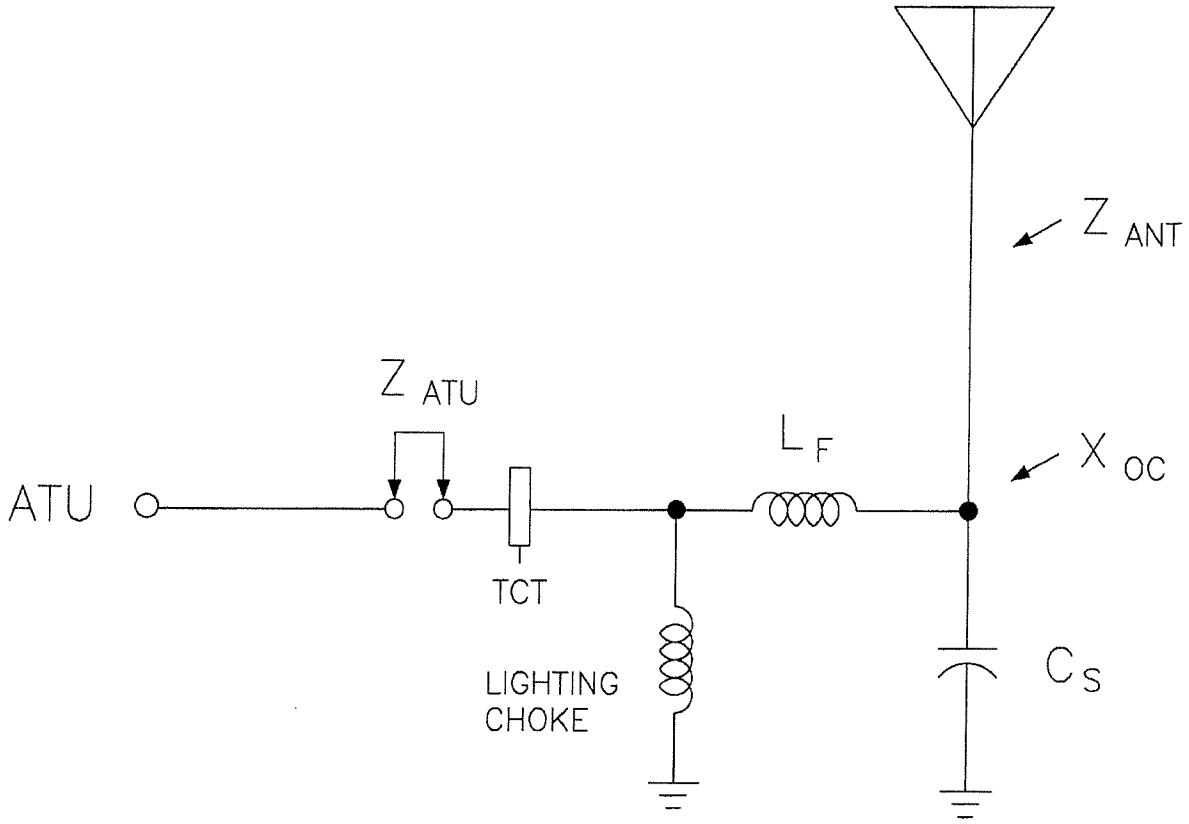
Measurement of the Potomac Instruments model AM-19(204) Antenna Monitor was performed to verify calibration. A single RF voltage was applied to the Tower #1 reference input and each other input by use of a "T" divider and equal length coaxial cables. This yields the following, which is within the manufacturer's rating of +/-1% and +/- 1.0°.

Tower Number	Ratio	Phase
1	1.000	0.0°
2	1.000	0.0°
3	1.000	0.0°
4	1.000	0.0°

RADIO STATION KJAY
APPLICATION FOR LICENSE

TOWER IMPEDANCE MEASUREMENTS COMPARED TO METHOD OF MOMENTS MODEL

Tower No.	Specified Cs (pF)	Calculated Xoc (Ω)	Measured Lf (uH)	Measured Xf (Ω)	Modeled Zant (Ω)	Modeled Zatu (Ω)	Measured Zatu (Ω)
1	15	+j 5521.5	2.34	+j 21.0	49.4 +j 49.0	47.9 +j 69.3	49.0 +j 68.6
2	15	+j 5506.3	1.78	+j 16.0	49.5 +j 48.2	48.1 +j 63.6	48.5 +j 63.6
3	30	+j 22006.4	3.34	+j 30.0	56.0 +j 64.5	53.5 +j 93.0	53.5 +j 93.0
4	15	+j 5539.7	3.01	+j 27.0	49.0 +j 48.0	47.4 +j 74.0	47.5 +j 74.4



Henry Communications
Napa, California

170315

Figure 4

RADIO STATION KJAY
APPLICATION FOR LICENSE

MOMENT MODEL PARAMETERS

Tower Number	Wire Number	Number of Segments	Base Node	Physical Height Degrees	Modeled Height Degrees	Modeled Radius Meters	% of Equivalent Radius
1	1	12	1	88.9°	95.5°	0.176 meters	100.0%
2	2	12	13	88.9°	95.2°	0.152 meters	100.0%
3	3	12	25	88.9°	98.0°	0.152 meters	100.0%
4	4	12	37	88.9°	95.2°	0.152 meters	100.0%

All four towers are uniform cross section, guyed with base insulator. Towers are three sided. Tower #1 has a 14.5" face width. Tower #2, Tower #3 and Tower #4 have a 12.5 inch face width. Base insulators for all of the towers are manufactured by Lapp Insulators with an assumed capacity of 15 pF (-j 7419.8 Ω at 1430 kHz). All four towers have a custom designed lighting choke with an inductance of 350 uH (+j 3144.7 Ω at 1430 kHz). The FM line at Tower #3 is isolated with a Kintronic Laboratories isolation capacitor with a capacitance of 15 pF (-j 7419.8 Ω at 1430 kHz). When combined with the base insulator capacitance of 15 pF this results in 30 pF (-j 3709.9 Ω) across the base of Tower #3.

RADIO STATION KJAY
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MOMENT MODEL SUMMARY FOR INDIVIDUAL TOWERS

KJAY TOWER 1 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.176	12
		0	0	95.5		
2	none	210.	310.	0	.152	12
		210.	310.	95.2		
3	none	90.	30.	0	.152	12
		90.	30.	98.		
4	none	242.41	331.45	0	.152	12
		242.41	331.45	95.2		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	7.93333	3	8.16667
radius	2	.152	1	.176

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.43	0	1	.022037	.0226852

Sources

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

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	5,506.3	0	0	0
2	25	0	22,006.4	0	0	0
3	37	0	5,539.7	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.43	49.432	49.043	69.633	44.8	2.5867	-7.0841	-.94581

RADIO STATION KJAY
APPLICATION FOR LICENSE

MOMENT MODEL SUMMARY FOR INDIVIDUAL TOWERS

KJAY TOWER 2 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.176	12
		0	0	95.5		
2	none	210.	310.	0	.152	12
		210.	310.	95.2		
3	none	90.	30.	0	.152	12
		90.	30.	98.		
4	none	242.41	331.45	0	.152	12
		242.41	331.45	95.2		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	7.93333	3	8.16667
radius	2	.152	1	.176

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.43	0	1	.022037	.0226852

Sources

source	node	sector	magnitude	phase	type
1	13	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	5,521.5	0	0	0
2	25	0	22,006.4	0	0	0
3	37	0	5,539.7	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 13, sector 1							
1.43	49.479	48.177	69.059	44.2	2.5454	-7.2125	-.91515

RADIO STATION KJAY
APPLICATION FOR LICENSE

MOMENT MODEL SUMMARY FOR INDIVIDUAL TOWERS

KJAY TOWER 3 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.176	12
		0	0	95.5		
2	none	210.	310.	0	.152	12
		210.	310.	95.2		
3	none	90.	30.	0	.152	12
		90.	30.	98.		
4	none	242.41	331.45	0	.152	12
		242.41	331.45	95.2		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	7.93333	3	8.16667
radius	2	.152	1	.176

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.43	0	1	.022037	.0226852

Sources

source	node	sector	magnitude	phase	type
1	25	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	5,521.5	0	0	0
2	13	0	5,506.3	0	0	0
3	37	0	5,539.7	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 25, sector 1							
1.43	54.845	64.521	84.681	49.6	3.2157	-5.5873	-1.404

RADIO STATION KJAY
APPLICATION FOR LICENSE

MOMENT MODEL SUMMARY FOR INDIVIDUAL TOWERS

KJAY TOWER 4 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.176	12
		0	0	95.5		
2	none	210.	310.	0	.152	12
		210.	310.	95.2		
3	none	90.	30.	0	.152	12
		90.	30.	98.		
4	none	242.41	331.45	0	.152	12
		242.41	331.45	95.2		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	7.93333	3	8.16667
radius	2	.152	1	.176

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.43	0	1	.022037	.0226852

Sources

source	node	sector	magnitude	phase	type
1	37	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	5,521.5	0	0	0
2	13	0	5,506.3	0	0	0
3	25	0	22,006.4	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 37, sector 1							
1.43	49.008	48.061	68.641	44.4	2.551	-7.1946	-.91934

RADIO STATION KJAY
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MOMENT MODEL ARRAY SYNTHESIS – DIRECTIONAL OPERATION

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.43 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	1.	22.
3	1.	-96.
4	1.	-74.

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	59.1542	69.8	1.97533	1.2
13	80.8512	103.5	1.9413	22.8
25	187.715	309.5	1.80066	272.
37	137.496	341.1	1.88667	290.4

Sum of square of source currents = 28.945
Total power = 500. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00959898	-.00883218
Y(1, 2)	.00376643	-.00180475
Y(1, 3)	.00501902	.00271506
Y(1, 4)	.00210839	-.00111048
Y(2, 1)	.00376645	-.00180478
Y(2, 2)	.00998008	-.00889074
Y(2, 3)	.00330634	-.00104603
Y(2, 4)	.00536686	.00360467
Y(3, 1)	.00501913	.00271483
Y(3, 2)	.00330634	-.00104613
Y(3, 3)	.00764479	-.0079548
Y(3, 4)	.00309773	-.00167832
Y(4, 1)	.00210842	-.00111052
Y(4, 2)	.00536687	.00360467
Y(4, 3)	.00309775	-.00167824
Y(4, 4)	.00925993	-.00888697

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	49.4023	48.9516
Z(1, 2)	-16.3252	-7.86317
Z(1, 3)	26.4264	-25.8377
Z(1, 4)	-17.2977	2.52317
Z(2, 1)	-16.3252	-7.86315
Z(2, 2)	49.32	48.1151
Z(2, 3)	-18.0584	-6.57758
Z(2, 4)	25.2035	-24.1372
Z(3, 1)	26.4276	-25.8369

RADIO STATION KJAY
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MOMENT MODEL ARRAY SYNTHESIS – DIRECTIONAL OPERATION

Z(3, 2)	-18.0582	-6.57788
Z(3, 3)	54.6964	64.422
Z(3, 4)	-17.1312	-8.18513
Z(4, 1)	-17.2976	2.52322
Z(4, 2)	25.2035	-24.1371
Z(4, 3)	-17.1313	-8.1849
Z(4, 4)	48.7871	47.9847

RADIO STATION KJAY
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MOMENT MODEL SUMMARY FOR DIRECTIONAL OPERATION

KJAY

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.176	12
		0	0	95.5		
2	none	210.	310.	0	.152	12
		210.	310.	95.2		
3	none	90.	30.	0	.152	12
		90.	30.	98.		
4	none	242.41	331.45	0	.152	12
		242.41	331.45	95.2		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	2	7.93333	3	8.16667
radius	2	.152	1	.176

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.43	0	1	.022037	.0226852

Sources

source	node	sector	magnitude	phase	type
1	1	1	83.6566	69.8	voltage
2	13	1	114.341	103.5	voltage
3	25	1	265.47	309.5	voltage
4	37	1	194.449	341.1	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.43	10.933	27.88	29.947	68.6	6.0486	-2.8986	-3.1249
source = 2; node 13, sector 1							
1.43	6.7169	41.103	41.648	80.7	12.529	-1.3895	-5.6255
source = 3; node 25, sector 1							
1.43	82.632	63.558	104.25	37.6	2.8894	-6.2712	-1.169

RADIO STATION KJAY
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MOMENT MODEL SUMMARY FOR DIRECTIONAL OPERATION

source = 4; node 37, sector 1
1.43 46.103 56.442 72.878 50.8 3.062 -5.889 -1.2941

CURRENT rms
Frequency = 1.43 MHz
Input power = 500. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	1.97533	1.2	1.97488	.0421058
2	0	0	7.95833	1.99986	.8	1.99969	.0267265
3	0	0	15.9167	1.97745	.5	1.97738	.016259
4	0	0	23.875	1.91727	.2	1.91726	7.6E-03
5	0	0	31.8333	1.82157	0.0	1.82157	4.2E-04
6	0	0	39.7917	1.69237	359.8	1.69236	-5.33E-03
7	0	0	47.75	1.53189	359.6	1.53186	-9.63E-03
8	0	0	55.7083	1.3426	359.5	1.34254	-.0124222
9	0	0	63.6667	1.1271	359.3	1.12702	-.0136253
10	0	0	71.625	.88785	359.2	.887752	-.0131708
11	0	0	79.5833	.626469	359.	.626373	-.0109744
12	0	0	87.5417	.341549	358.8	.34148	-6.89E-03
END	0	0	95.5	0	0	0	0
GND	134.985	160.869	0	1.9413	22.8	1.79013	.751068
14	134.985	160.869	7.93333	1.98131	22.5	1.83057	.758047
15	134.985	160.869	15.8667	1.96948	22.3	1.82195	.7479
16	134.985	160.869	23.8	1.91766	22.2	1.77592	.723562
17	134.985	160.869	31.7333	1.82845	22.	1.69493	.685881
18	134.985	160.869	39.6667	1.70397	21.9	1.58096	.635676
19	134.985	160.869	47.6	1.5465	21.8	1.43609	.573865
20	134.985	160.869	55.5333	1.35853	21.7	1.26259	.50148
21	134.985	160.869	63.4667	1.14271	21.5	1.06288	.419617
22	134.985	160.869	71.4	.901546	21.4	.839244	.329325
23	134.985	160.869	79.3333	.636697	21.3	.593179	.231346
24	134.985	160.869	87.2667	.346813	21.2	.323375	.125331
END	134.985	160.869	95.2	0	0	0	0
GND	77.9423	-45.	0	1.80066	272.	.0615141	-1.79961
26	77.9423	-45.	8.16667	1.87029	268.7	-.0418576	-1.86982
27	77.9423	-45.	16.3333	1.8822	266.7	-.107658	-1.87912
28	77.9423	-45.	24.5	1.85163	265.2	-.156204	-1.84503
29	77.9423	-45.	32.6667	1.78105	263.9	-.190077	-1.77088
30	77.9423	-45.	40.8333	1.67239	262.8	-.210236	-1.65912
31	77.9423	-45.	49.	1.52774	261.8	-.217222	-1.51222
32	77.9423	-45.	57.1667	1.34956	261.	-.211506	-1.33288
33	77.9423	-45.	65.3333	1.14054	260.2	-.193593	-1.12399
34	77.9423	-45.	73.5	.903372	259.5	-.164005	-.88836
35	77.9423	-45.	81.6667	.639991	258.9	-.123142	-.628033
36	77.9423	-45.	89.8333	.349363	258.3	-.0707842	-.342118
END	77.9423	-45.	98.	0	0	0	0
GND	212.933	115.854	0	1.88667	290.4	.656681	-1.7687
38	212.933	115.854	7.93333	1.9466	288.6	.620497	-1.84505

RADIO STATION KJAY
APPLICATION FOR LICENSE

MOMENT MODEL SUMMARY FOR DIRECTIONAL OPERATION

39	212.933	115.854	15.8667	1.94908	287.5	.585635	-1.85902
40	212.933	115.854	23.8	1.90917	286.6	.546116	-1.8294
41	212.933	115.854	31.7333	1.82971	285.9	.501509	-1.75964
42	212.933	115.854	39.6667	1.71282	285.3	.452008	-1.65211
43	212.933	115.854	47.6	1.56076	284.8	.398048	-1.50914
44	212.933	115.854	55.5333	1.37599	284.3	.340177	-1.33328
45	212.933	115.854	63.4667	1.16117	283.9	.278973	-1.12716
46	212.933	115.854	71.4	.918818	283.5	.214971	-.893317
47	212.933	115.854	79.3333	.650668	283.2	.148497	-.633496
48	212.933	115.854	87.2667	.355323	282.9	.079196	-.346385
END	212.933	115.854	95.2	0	0	0	0

RADIO STATION KJAY
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DERIVED DIRECTIONAL PARAMETERS

	Theoretical		Base Network Input Current		Normalized TCT	
Tower	Field	Phase	Amplitude	Phase	Amplitude	Phase
1 (SE)	1.000	0.0°	2.00	+1.10°	1.000	0.0°
2 W)	1.000	+22.0°	1.97	+22.71°	0.985	+21.6°
3 (E)	1.000	-96.0°	1.82	-88.28°	0.910	-89.4°
4 (NW)	1.000	-74.0°	1.92	-70.13°	0.960	-71.2°

RADIO STATION KJAY
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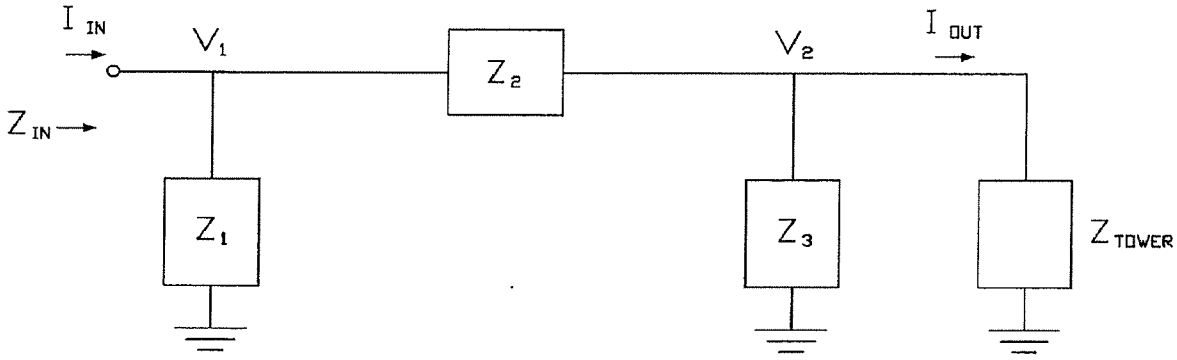
TOWER BASE CIRCUIT ANALYSIS DESCRIPTION

Circuit Analysis was performed on each tower of the KJAY model. Phasetek, Incorporated nodal Circuit Analysis program was used to compute base model input/output voltages and currents. For the directional mode, the calculated Mininec Tower Base Drive Voltage was used to determine the Base Network Input Current. This point is the location of the Sampling TCT. "Z1" represents the ATU Shunt Impedance, "Z2" represents the Tower Feed Impedance, and "Z3" represents the Tower Base Shunt Impedance.



RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : KJAY
NETWORK ID : TOWER 1(OTHERS OPEN)

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 21.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7419.80 OHMS
TOWER IMPEDANCE (R,X) : 49.43, 49.04 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	50.09	49.03
1		2	0.00	21.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	81.41	-10.04

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	47.92	69.25	84.22	55.32
INPUT CURRENT (AMPS) :	0.68	-0.98	1.19	-55.32
OUTPUT CURRENT (AMPS) :	0.67	-0.96	1.17	-54.81

INPUT/OUTPUT CURRENT RATIO = 1.0157
INPUT/OUTPUT PHASE = -0.51 DEGREES

RADIO STATION KJAY
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CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : KJAY
NETWORK ID : TOWER 2(OTHERS OPEN)

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 16.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7419.80 OHMS
TOWER IMPEDANCE (R,X) : 49.48, 48.18 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	50.13	48.16
1		2	0.00	16.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	85.38	-8.15

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	48.13	63.62	79.78	52.89
INPUT CURRENT (AMPS) :	0.76	-1.00	1.25	-52.89
OUTPUT CURRENT (AMPS) :	0.75	-0.98	1.24	-52.38

INPUT/OUTPUT CURRENT RATIO = 1.0139
INPUT/OUTPUT PHASE = -0.51 DEGREES

RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : KJAY
NETWORK ID : TOWER 3(OTHERS OPEN)

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 30.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -3709.90 OHMS
TOWER IMPEDANCE (R,X) : 54.85, 64.52 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	56.79	64.81
1		2	0.00	30.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	77.97	-10.31

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	53.50	92.97	107.27	60.08
INPUT CURRENT (AMPS) :	0.46	-0.81	0.93	-60.08
OUTPUT CURRENT (AMPS) :	0.46	-0.80	0.92	-59.94

INPUT/OUTPUT CURRENT RATIO = 1.0125
INPUT/OUTPUT PHASE = -0.14 DEGREES

RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : KJAY
NETWORK ID : TOWER 4(OTHERS OPEN)

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 27.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7419.80 OHMS
TOWER IMPEDANCE (R,X) : 49.01, 48.06 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	49.65	48.04
1		2	0.00	27.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	76.78	-12.45

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	47.35	74.03	87.87	57.40
INPUT CURRENT (AMPS) :	0.61	-0.96	1.14	-57.40
OUTPUT CURRENT (AMPS) :	0.61	-0.94	1.12	-56.89

INPUT/OUTPUT CURRENT RATIO = 1.0174
INPUT/OUTPUT PHASE = -0.50 DEGREES

RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR DIRECTIONAL OPERATION

CUSTOMER : KJAY
NETWORK ID : TOWER 1 DAY

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 21.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7419.80 OHMS
TOWER IMPEDANCE (R,X) : 10.93, 27.88 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	11.02	27.97
1		2	0.00	21.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	98.77	78.62
2	59.15	69.80

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	10.68	48.25	49.42	77.52
INPUT CURRENT (AMPS) :	2.00	0.04	2.00	1.10
OUTPUT CURRENT (AMPS) :	1.97	0.04	1.98	1.21

INPUT/OUTPUT CURRENT RATIO = 1.0118
INPUT/OUTPUT PHASE = -0.11 DEGREES

RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR DIRECTIONAL OPERATION

CUSTOMER : KJAY
NETWORK ID : TOWER 2 DAY

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 16.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7419.80 OHMS
TOWER IMPEDANCE (R,X) : 6.72, 41.10 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	6.79	41.33
1		2	0.00	16.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	111.44	106.08
2	80.85	103.50

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	6.55	56.31	56.69	83.36
INPUT CURRENT (AMPS) :	1.81	0.76	1.97	22.71
OUTPUT CURRENT (AMPS) :	1.79	0.75	1.94	22.78

INPUT/OUTPUT CURRENT RATIO = 1.0126
INPUT/OUTPUT PHASE = -0.07 DEGREES

RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR DIRECTIONAL OPERATION

CUSTOMER : KJAY
NETWORK ID : TOWER 3 DAY

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 30.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -3709.90 OHMS
TOWER IMPEDANCE (R,X) : 82.63, 63.56 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	85.49	62.73
1		2	0.00	30.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	223.28	-39.44
2	187.71	309.50

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	80.61	92.20	122.47	48.84
INPUT CURRENT (AMPS) :	0.05	-1.82	1.82	-88.28
OUTPUT CURRENT (AMPS) :	0.06	-1.80	1.80	-88.07

INPUT/OUTPUT CURRENT RATIO = 1.0125
INPUT/OUTPUT PHASE = -0.21 DEGREES

RADIO STATION KJAY
APPLICATION FOR LICENSE

CIRCUIT ANALYSIS FOR DIRECTIONAL OPERATION

CUSTOMER : KJAY
NETWORK ID : TOWER 4 DAY

FREQUENCY : 1430.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 3144.70 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 27.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7419.80 OHMS
TOWER IMPEDANCE (R,X) : 46.10, 56.44 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	3144.70
2		GROUND	46.81	56.58
1		2	0.00	27.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	179.37	-8.55
2	137.50	341.10

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	44.41	82.06	93.31	61.58
INPUT CURRENT (AMPS) :	0.65	-1.81	1.92	-70.13
OUTPUT CURRENT (AMPS) :	0.66	-1.77	1.89	-69.66

INPUT/OUTPUT CURRENT RATIO = 1.0189
INPUT/OUTPUT PHASE = -0.47 DEGREES

RADIO STATION KJAY
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REFERENCE POINT MEASUREMENTS

Radial 45.7°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
0.473	705	38° 30' 27.35" N 121° 33' 28.36" W	On South River Road on East side between two telephone poles 100 ft. North of 4900 mailbox
1.94	168	38° 31' 00.47" N 121° 32' 44.74" W	At mailbox. 4380 South River Road.
3.65	90	38° 31' 38.96" N 121° 31' 54.10" W	At red mark in pavement. On South River Road just South of Davis Road.

Radial 114.1°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
0.733	13.8	38° 30' 06.89" N 121° 33' 14.77" W	At 6871 Pocket Road sidewalk marker
1.17	7.6	38° 30' 00.88" N 121° 32' 58.45" W	At 6965 Riverside Blvd. mailbox
1.35	10.5	38° 29' 58.88" N 121° 32' 51.28" W	At 6975 Slate River mailbox

Radial 145.9°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
1.63	9.8	38° 29' 33.08" N 121° 33' 04.64" W	At Pocket Road and Zephyr Ranch Drive street sign / light pole
2.92	3.50	38° 28' 58.46" N 121° 32' 34.43" W	On sidewalk at middle of driveway on 7767 River Village Road
3.09	3.35	38° 28' 53.67" N 121° 32' 30.72" W	At underground cable box on sidewalk between 7613 and 7605 Pocket Road

Note: Measurements taken during daylight hours on March 9 and March 10, 2017

RADIO STATION KJAY
APPLICATION FOR LICENSE

REFERENCE POINT MEASUREMENTS

Radial 189.0°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
5.85	6.3	38° 27' 09.24" N 121° 34' 20.85" W	On Babel Slough Road. Just North of pumping station.
6.54	5.9	38° 26' 47.50" N 121° 34' 24.86" W	On Pump House Road.
8.51	4.3	38° 25' 44.31" N 121° 34' 38.01" W	On Willow Point Road.

Radial 231.0°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
2.20	16.1	38° 29' 31.90" N 121° 34' 53.15" W	On Jefferson Blvd.
14.8	1.48	38° 25' 16.14" N 121° 41' 37.72" W	On Levee Road (Road 104) 100' East of road in field.
15.7	1.12	38° 24' 57.57" N 121° 42' 07.22" W	At mailbox. 8356 Midway Road

Radial 268.8°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
1.78	11.8	38° 30' 15.50" N 121° 34' 55.94" W	At "No Parking/Authorized Parking Only" Sierra Hart sign..
8.41	1.53	38° 30' 11.37" N 121° 39' 30.50" W	On dirt road, just North of Road 106 and Road 35 junction
11.6	0.50	38° 30' 09.61" N 121° 41' 43.51" W	Across from gas pole 2193+006, just South of Road 104 and Road 35 intersection.

Note: Measurements taken during daylight hours on March 9 and March 10, 2017

RADIO STATION KJAY
APPLICATION FOR LICENSE

REFERENCE POINT MEASUREMENTS

Radial 317.5°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
1.08	112	38° 30' 42.70" N 121° 34' 12.33" W	At Canal on Burrows Avenue
1.45	108	38° 30' 51.46" N 121° 34' 22.98" W	On Jefferson Blvd.
10.6	21.0	38° 34' 29.48" N 121° 38' 38.19" W	On levee, by marker "70"

Radial 351.2°T

Distance *kilometers*	Field *mV/m*	Coordinates NAD 83	Description
2.43	14.0	38° 31' 34.54" N 121° 33' 58.34" W	At "No Parking" sign across from 3263 San Vicente Road.
2.65	9.6	38° 31' 41.28" N 121° 33' 59.61" W	At Southwest corner of intersection of Otay St. and Pillsbury Road
3.43	2.1	38° 32' 06.54" N 121° 34' 04.10" W	Just West of Intersection of Otis Avenue and Marshall Road

Note: Measurements taken during daylight hours on March 9 and March 10, 2017

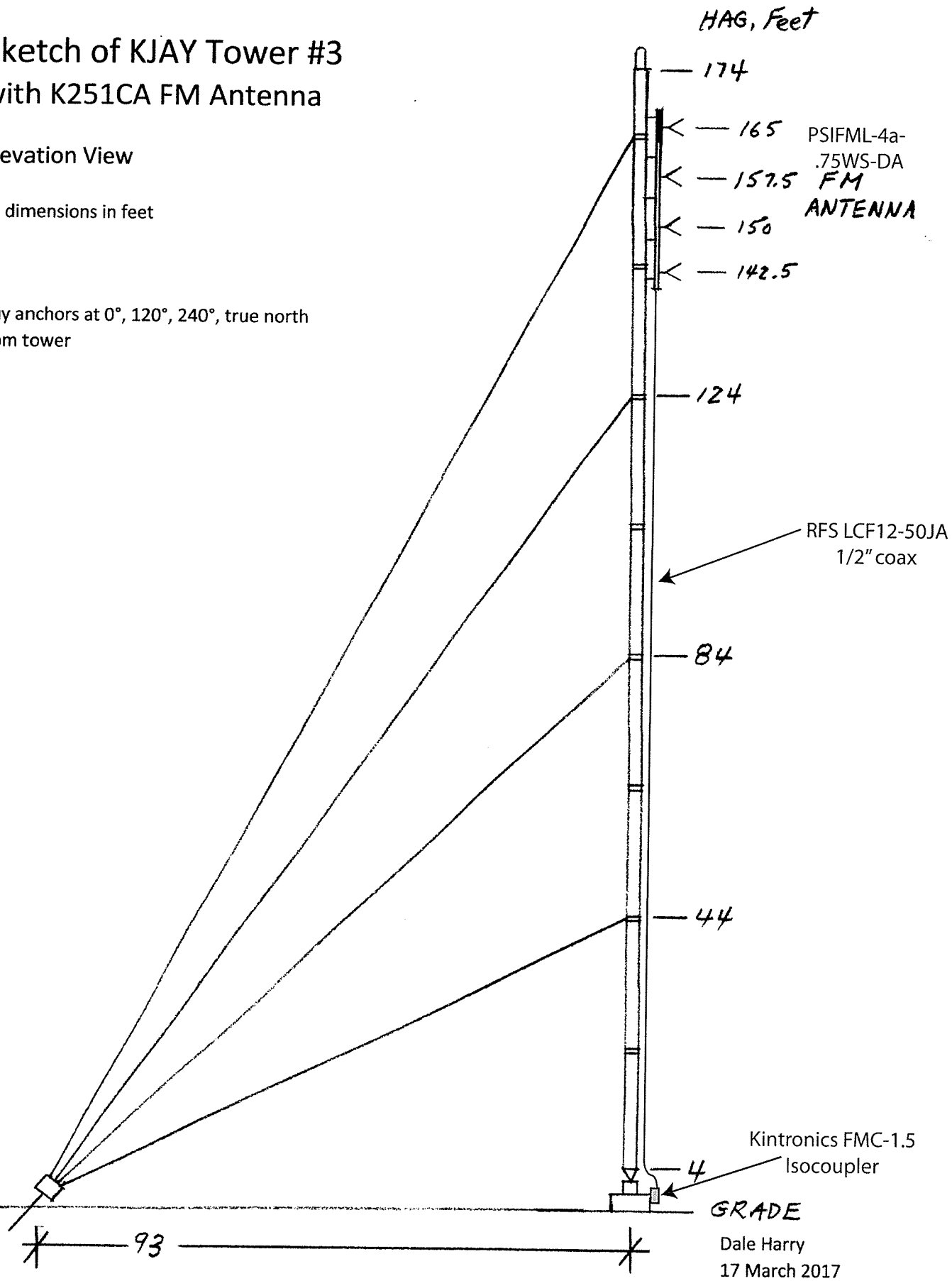
EXHIBIT 2

Sketch of KJAY Tower #3
with K251CA FM Antenna

Elevation View

All dimensions in feet

Guy anchors at 0°, 120°, 240°, true north from tower



Dale Harry
17 March 2017