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Federal Communications Commission
Washington, D. C. 20554

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

FOR FCC USE ONLY

FCC 302-AM

APPLICATION FOR AM

BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY
FILE NO. BMML-20120525AGC

SNC 6/4/12

SECTION I - APPLICANT FEE INFORMATION

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

Disney Worldwide Services, Inc.

MAILING ADDRESS (Line 1) (Maximum 35 characters)

77 West 66th Street, 16th Floor

MAILING ADDRESS (Line 2) (Maximum 35 characters)

ATTN: John Zucker, Esq.

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
New York	NY	10023-6298

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
212-456-7387	KMKY	Fac. ID # 96

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
$ 1365.00	

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SECTION II - APPLICANT INFORMATION

1. NAME OF APPLICANT RD San Francisco Assets, LLC		
MAILING ADDRESS 77 West 66th Street, 16th Floor, ATTN: John W. Zucker, Esq.		
CITY New York	STATE NY	ZIP CODE 10023-6298

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
KMKY	Oakland CA	BP-20100702CQV	NA	Jan. 6, 2014

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. Operating Under BSTA-20120118ADT expires 7/19/2012

Exhibit No.

4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met? ☑ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect? ☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No.

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)? ☑ Yes ☐ No

☐ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination? ☐ Yes ☑ No

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

Exhibit No.

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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	
John W. Zucker, Esq.	[signature]	
Title	**Date**	**Telephone Number**
Assistant Secretary	May 24, 2012	212-456-7387

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.

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APPLICATION FOR LICENSE INFORMATION
RADIO STATION KMKY
OAKLAND, CALIFORNIA

APRIL 27, 2012

1310 KHZ 5KW DA-1 U

APPLICATION FOR LICENSE INFORMATION
RADIO STATION KMKY
OAKLAND, CALIFORNIA

1310 KHZ 5 KW DA-1 U

Table of Contents

Executive Summary - KMKY

This engineering exhibit supports an application for license for the recently modified directional antenna system of radio station KMKY in Oakland, California. KMKY operates fulltime on 1310 kilohertz with 5 kilowatts employing the same directional antenna pattern day and night. Minor directional antenna changes are authorized by construction permit BP-20100702CQV.

The authorized changes have been made in accordance with the terms of the construction permit and specifications that were provided in the application for construction permit. The directional antenna phasing and coupling equipment has been modified and adjusted to produce the newly authorized directional antenna pattern.

Information is provided herein demonstrating that the directional antenna parameters for the new pattern have been determined in accordance with the requirements of section 73.151(c) of the FCC Rules. The antenna system has been adjusted to produce antenna monitor parameters within +/- 5 percent in ratio and +/- 3 degrees in phase of the modeled values, as required by the Rules.

Information regarding direct measurement of power and radiofrequency radiation protection measures at the site is also included herein.

Program test authority for the new directional antenna pattern is hereby requested.

Ronald D. Rackley, P.E.
April 27, 2012

Analysis of Tower Impedance Measurements to Verify Method of Moments Model – KMKY

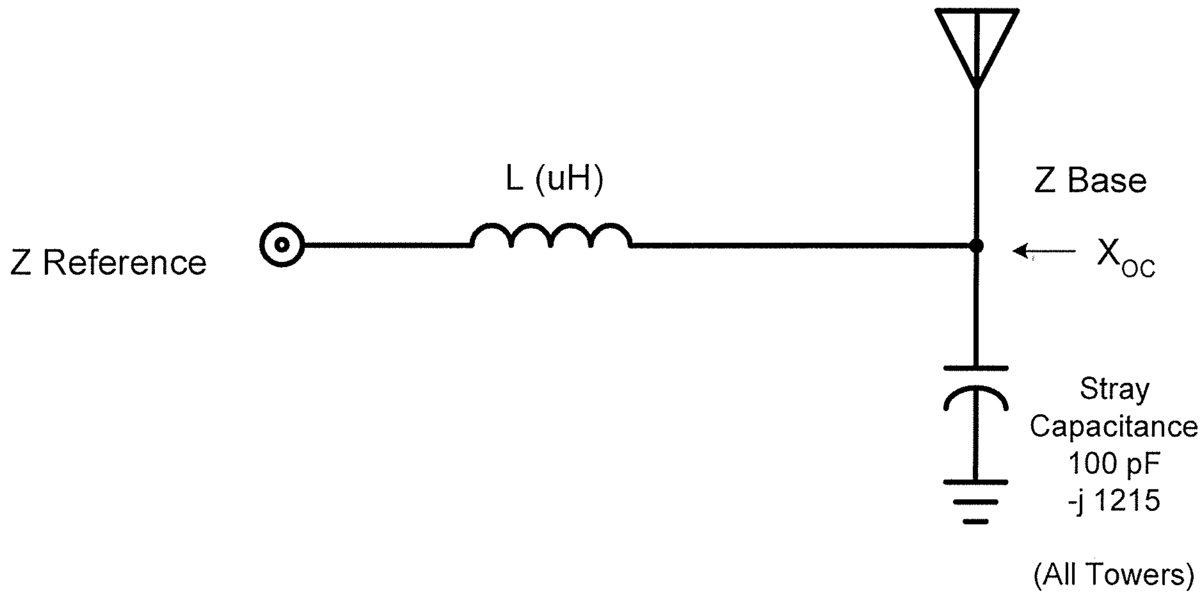
Tower base impedance measurements were made at the final J-plugs within the antenna tuning units ("ATUs") using a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler in a calibrated measurement system. The other towers were all open circuited at the same points where impedance measurements were made for them (the "reference points") for each of the measurements. The measurements were made by Mr. Lyndon Willoughby.

The reference point at each tower is adjacent to the sampling transformer of the antenna monitor system at the output of the ATU enclosure. The current passes directly from that point over conductors through the enclosure insulator and on to the tower above the base insulator. There are no adjustable shunt components following the sampling transformers. An assumed value for the sum of the base insulator and base region stray capacitances across the ATU output was employed in the base circuit calculations for each tower. The static drain coils across the tower bases have high impedances that do not require consideration, as evidenced by the fact that satisfactory analysis was possible with typical base shunt capacitances and all other assumptions well within the range limitations of the FCC Rules. Circuit calculations were performed to relate the method of moments modeled impedances of the tower feedpoints to the ATU output measurement (reference) points as shown on the following pages. The Xoc shown for each tower, which was calculated for the assumed base conditions, was used in the method of moments model as a load at ground level for the open circuited case.

In addition to the page showing the schematic of the assumed circuit and tabulation of calculated values, pages showing the results of calculations using the WCAP network analysis program from Westberg Consulting are provided. WCAP performs such calculations using nodal analysis, as do other modern circuit analysis programs such as the commonly available ones based on SPICE software.

In each of the WCAP tabulations, node 2 represents the ATU output reference point and node 3 represents the tower feedpoint. Node 0 represents ground potential. The numerals in the file names shown on the tabulations correspond to the tower numbers. It should be noted that the calculated reference point impedances appear under the "TO NODE IMPEDANCE" columns of the WCAP tabulations, following the phantom 1.0 ohm resistors (R 1 - 2) that were included in series with the drive current sources (I 0 -1)) to provide calculation points for the impedances. The tower base impedances from the method of moments model are represented by complex loads from node 3 to ground (R 3 - 0). The shunt capacitances shown for the towers on the schematic were used for the calculations.

The modeled and measured base impedances at the ATU output jacks with the other towers open circuited at their filter unit output jacks agree within +/- 2 ohms and +/- 4 percent for resistance and reactance, as required by the FCC Rules.



TOWER	L (uH)	X_L	X_{OC}	Z Base (Modeled)	Z Reference (Modeled)	Z Reference (Measured)
1 (W)	4.835	+ j 39.8	- j 1215	40.8 +j 5.5	41.2 +j 43.9	41.0 +j 43.9
2 (C)	6.585	+ j 54.2	- j 1215	32.5 -j 4.8	32.2 +j 48.6	32.6 +j 48.6
3 (E)	6.245	+ j 51.4	- j 1215	36.6 -j 1.7	36.4 +j 48.6	36.3 +j 48.6

ANALYSIS OF TOWER IMPEDANCE MEASUREMENTS TO VERIFY METHOD OF MOMENTS MODEL

RADIO STATION KMKY
OAKLAND, CALIFORNIA
1310 KHZ 5 KW DA-1 U

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Tower 1 Individually Driven Base Circuit Analysis

WESTBERG CIRCUIT ANALYSIS PROGRAM

FILE NAME = KMKY1OC.TXT

I	1.0000	0	1	.0000	.0000	.0000
R	1.0000	1	2	.0000	.0000	.0000
L	4.8350	2	3	.0000	.0000	.0000
C	.0001	3	0	.0000	.0000	.0000
R	40.8410	3	0	5.4668	.0000	.0000
EX	.0000	0	0	.0000	.0000	.0000

FREQ = 1.310

NODE	VOLT MAG	VOLT PHASE
1	60.8676	46.1543
2	60.1792	46.8410
3	41.3679	5.6900

			BRANCH VOLTAGE		BRANCH CURRENT		FROM NODE IMPEDANCE		TO NODE IMPEDANCE	
			MAG	PHASE	MAG	PHASE	RESISTANCE	REACTANCE	RESISTANCE	REACTANCE
R	1- 2	1.000	1.00	.000	1.00	.000	42.16	43.90	41.16	43.90
L	2- 3	4.835	39.80	90.000	1.00	.000	41.16	43.90	41.16	4.10
C	3- 0	.000	41.37	5.690	.03	95.690	.00	-1214.92	.00	.00
R	3- 0	40.841	41.37	5.690	1.00	-1.934	40.84	5.47	.00	.00

Tower 2 Individually Driven Base Circuit Analysis

WESTBERG CIRCUIT ANALYSIS PROGRAM

FILE NAME = KMKY2OC.TXT

I	1.0000	0	1	.0000	.0000	.0000
R	1.0000	1	2	.0000	.0000	.0000
L	6.5850	2	3	.0000	.0000	.0000
C	.0001	3	0	.0000	.0000	.0000
R	32.4630	3	0	-4.7943	.0000	.0000
EX	.0000	0	0	.0000	.0000	.0000

FREQ = 1.310

NODE	VOLT MAG	VOLT PHASE
1	58.8236	55.6565
2	58.2653	56.4685
3	32.6746	-9.9256

			BRANCH VOLTAGE		BRANCH CURRENT		FROM NODE IMPEDANCE		TO NODE IMPEDANCE	
			MAG	PHASE	MAG	PHASE	RESISTANCE	REACTANCE	RESISTANCE	REACTANCE
R	1- 2	1.000	1.00	.000	1.00	.000	33.19	48.57	32.19	48.57
L	2- 3	6.585	54.20	90.000	1.00	.000	32.19	48.57	32.19	-5.63
C	3- 0	.000	32.67	-9.926	.03	80.074	.00	-1214.92	.00	.00
R	3- 0	32.463	32.67	-9.926	1.00	-1.525	32.46	-4.79	.00	.00

Tower 3 Individually Driven Base Circuit Analysis

WESTBERG CIRCUIT ANALYSIS PROGRAM

FILE NAME = KMKY3OC.TXT

I	1.0000	0	1	.0000	.0000	.0000
R	1.0000	1	2	.0000	.0000	.0000
L	6.2450	2	3	.0000	.0000	.0000
C	.0001	3	0	.0000	.0000	.0000
R	36.5730	3	0	-1.6832	.0000	.0000
EX	.0000	0	0	.0000	.0000	.0000

FREQ = 1.310

NODE	VOLT MAG	VOLT PHASE
1	61.3692	52.4061
2	60.7643	53.1532
3	36.5445	-4.3569

			BRANCH VOLTAGE MAG	BRANCH VOLTAGE PHASE	BRANCH CURRENT MAG	BRANCH CURRENT PHASE	FROM NODE IMPEDANCE RESISTANCE	FROM NODE IMPEDANCE REACTANCE	TO NODE IMPEDANCE RESISTANCE	TO NODE IMPEDANCE REACTANCE
R	1- 2	1.000	1.00	.000	1.00	.000	37.44	48.63	36.44	48.63
L	2- 3	6.245	51.40	90.000	1.00	.000	36.44	48.63	36.44	-2.78
C	3- 0	.000	36.54	-4.357	.03	85.643	.00	-1214.92	.00	.00
R	3- 0	36.573	36.54	-4.357	1.00	-1.722	36.57	-1.68	.00	.00

Derivation of Operating Parameters for Directional Antenna - KMKY

The method of moments model of the array, following verification with the measured individual open circuited base impedances, was utilized for directional antenna calculations. Calculations were made to determine the complex voltage values for sources located at the base insulator level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern. With these voltage sources, the tower currents were calculated. The currents at the ATU unit outputs, where the antenna monitor samples are taken, were calculated from the method of moments tower currents for directional antenna operation using WCAP circuit modeling with the assumptions that were derived from the single tower measurements on the array and the method of moments calculated tower operating impedances. In each of the following WCAP tabulations, node 2 represents the reference point and node 3 represents the tower feedpoint. Node 0 represents ground potential. The tower operating impedances are represented by complex loads from node 3 to ground (R 3 - 0). It should be noted that the calculated reference point current magnitudes and phases appear in the first and fourth columns following the drive current sources (I 0 -1)). As the current transformers and sampling lines are identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled reference point currents.

Tower	Modeled Current Pulse	Modeled Current Magnitude @ Toroid (amperes)	Modeled Current Phase @ Toroid (degrees)	Modeled Antenna Monitor Ratio	Modeled Antenna Monitor Phase (degrees)
1	1	5.3779	+0.082	0.335	-131.9
2	16	16.0556	+131.984	1.000	0.0
3	31	8.6225	-81.345	0.537	+146.7

Tower 1 DA Base Circuit Analysis

WESTBERG CIRCUIT ANALYSIS PROGRAM

FILE NAME = KMKY1DA.TXT

I	537.7900	0	1	.0820	.0000	.0000
R	1.0000	1	2	.0000	.0000	.0000
L	4.8350	2	3	.0000	.0000	.0000
C	.0001	3	0	.0000	.0000	.0000
R	1.6055	3	0	90.2080	.0000	.0000
EX	.0000	0	0	.0000	.0000	.0000

FREQ = 1.310

NODE	VOLT MAG	VOLT PHASE
1	73821.0000	88.8826
2	73811.7000	89.2999
3	52412.2100	88.9806

				BRANCH VOLTAGE MAG	BRANCH VOLTAGE PHASE	BRANCH CURRENT MAG	BRANCH CURRENT PHASE	FROM NODE IMPEDANCE RESISTANCE	FROM NODE IMPEDANCE REACTANCE	TO NODE IMPEDANCE RESISTANCE	TO NODE IMPEDANCE REACTANCE
R	1-	2	1.000	537.79	.082	537.79	.082	2.87	137.24	1.87	137.24
L	2-	3	4.835	21402.30	90.082	537.79	.082	1.87	137.24	1.87	97.44
C	3-	0	.000	52412.21	88.981	43.14	178.981	.00	-1214.92	.00	.00
R	3-	0	1.605	52412.21	88.981	580.92	.000	1.61	90.21	.00	.00

Tower 2 DA Base Circuit Analysis

WESTBERG CIRCUIT ANALYSIS PROGRAM

FILE NAME = KMKY2DA.TXT

I	1605.5600	0	1	131.9840	.0000	.0000
R	1.0000	1	2	.0000	.0000	.0000
L	6.5850	2	3	.0000	.0000	.0000
C	.0001	3	0	.0000	.0000	.0000
R	18.6330	3	0	7.2662	.0000	.0000
EX	.0000	0	0	.0000	.0000	.0000

FREQ = 1.310

NODE	VOLT MAG	VOLT PHASE
1	103331.8000	-155.9837
2	102847.8000	-155.1328
3	32300.0200	152.4040

				BRANCH VOLTAGE MAG	BRANCH VOLTAGE PHASE	BRANCH CURRENT MAG	BRANCH CURRENT PHASE	FROM NODE IMPEDANCE RESISTANCE	FROM NODE IMPEDANCE REACTANCE	TO NODE IMPEDANCE RESISTANCE	TO NODE IMPEDANCE REACTANCE
R	1-	2	1.000	1605.56	131.984	1605.56	131.984	19.85	61.22	18.85	61.22
L	2-	3	6.585	87022.89	-138.016	1605.56	131.984	18.85	61.22	18.85	7.02
C	3-	0	.000	32300.02	152.404	26.59	-117.596	.00	-1214.92	.00	.00
R	3-	0	18.633	32300.02	152.404	1615.03	131.100	18.63	7.27	.00	.00

Currents are multiplied X 100 for improved resolution.

Tower 3 DA Base Circuit Analysis

WESTBERG CIRCUIT ANALYSIS PROGRAM

FILE NAME = KMKY3DA.TXT

I	862.2500	0	1	278.6550	.0000	.0000
R	1.0000	1	2	.0000	.0000	.0000
L	6.2450	2	3	.0000	.0000	.0000
C	.0001	3	0	.0000	.0000	.0000
R	1.1624	3	0	-4.0351	.0000	.0000
EX	.0000	0	0	.0000	.0000	.0000

FREQ = 1.310

NODE	VOLT MAG	VOLT PHASE
1	40895.2700	6.0511
2	40865.1700	7.2589
3	3608.7650	-155.3294

			BRANCH VOLTAGE		BRANCH CURRENT		FROM NODE IMPEDANCE		TO NODE IMPEDANCE	
			MAG	PHASE	MAG	PHASE	RESISTANCE	REACTANCE	RESISTANCE	REACTANCE
R	1- 2	1.000	862.25	-81.345	862.25	-81.345	2.15	47.38	1.15	47.38
L	2- 3	6.245	44321.73	8.655	862.25	-81.345	1.15	47.38	1.15	-4.02
C	3- 0	.000	3608.77	-155.329	2.97	-65.329	.00	-1214.92	.00	.00
R	3- 0	1.162	3608.77	-155.329	859.40	-81.400	1.16	-4.04	.00	.00

Method of Moments Model Details for Towers Driven Individually – KMKY

The array of tapered self-supporting towers was modeled using Expert MININEC Broadcast Professional Version 14.5. The tower geometry was specified using the geographic coordinate system. Each tower was modeled using five equal-length three-segment wires, connected end-to-end, to simulate its taper. The towers are all physically 90.1 degrees in electrical height and their segment length is 6.01 electrical degrees.

The individual tower model characteristics were adjusted to provide a match of their modeled impedances, when presented to a circuit model which included branches representing the shunt capacitances and feedline hookup inductances, with the base impedances that were measured at the output jacks of the tuning units while the other towers of the array were open circuited. The method of moments model assumed loads at ground level having the reactances that were calculated for them using the base circuit models for the open circuited towers of the array.

Each tower's modeled height relative to its physical height falls within the required range of 75 to 125 percent.

TOWER	Physical Height (degrees)	Modeled Height (degrees)	Modeled Percent of Height
1	90.1	97.5	108.2
2	90.1	93.5	103.8
3	90.1	95.0	105.4

Towers 1 and 3 are triangular in cross section while tower 2 is a square tower. Each wire was modeled with the radius of a circle having a circumference equal to the sum of the widths of the tower sides at the height of its center. .

The following pages show the details of the method of moments models for the individually driven towers. The numerals in the file names shown on the tabulations correspond to the tower numbers.

Tower 1 Driven Individually

C:\MBPRO14.5\KMKY1OC 04-14-2012 11:49:08

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.31	40.841	5.4668	41.205	7.6	1.2655	-18.621	-6.E-02

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	3
		0	0	19.5		
2	none	0	0	19.5	1.35	3
		0	0	39.		
3	none	0	0	39.	1.01	3
		0	0	58.5		
4	none	0	0	58.5	.67	3
		0	0	78.		
5	none	0	0	78.	.34	3
		0	0	97.5		
6	none	70.	75.	0	1.92	3
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	3
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	3
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	3
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	3
		70.	75.	93.5		
11	none	140.	75.	0	1.68	3
		140.	75.	19.		
12	none	140.	75.	19.	1.35	3
		140.	75.	38.		
13	none	140.	75.	38.	1.01	3
		140.	75.	57.		
14	none	140.	75.	57.	.67	3
		140.	75.	76.		
15	none	140.	75.	76.	.34	3
		140.	75.	95.		

Number of wires = 15
current nodes = 45

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	6.23333	3	6.5
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION

Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.31	0	1	.0173148	.0180556

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	16	0	-1,215.	0	0	0
2	31	0	-1,215.	0	0	0

Tower 2 Driven Individually

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 16, sector 1							
1.31	32.463	-4.7943	32.815	351.6	1.5644	-13.147	-.21566

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	3
		0	0	19.5		
2	none	0	0	19.5	1.35	3
		0	0	39.		
3	none	0	0	39.	1.01	3
		0	0	58.5		
4	none	0	0	58.5	.67	3
		0	0	78.		
5	none	0	0	78.	.34	3
		0	0	97.5		
6	none	70.	75.	0	1.92	3
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	3
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	3
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	3
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	3
		70.	75.	93.5		
11	none	140.	75.	0	1.68	3
		140.	75.	19.		
12	none	140.	75.	19.	1.35	3
		140.	75.	38.		
13	none	140.	75.	38.	1.01	3
		140.	75.	57.		
14	none	140.	75.	57.	.67	3
		140.	75.	76.		
15	none	140.	75.	76.	.34	3
		140.	75.	95.		

Number of wires = 15
current nodes = 45

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	6.23333	3	6.5
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION

Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.31	0	1	.0173148	.0180556

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	-1,215.	0	0	0
2	31	0	-1,215.	0	0	0

Tower 3 Driven Individually

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IMPEDANCE

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 31, sector 1							
1.31	36.573	-1.6832	36.611	357.4	1.3705	-16.122	-.10739

GEOMETRY

Wire coordinates in degrees; other dimensions in meters

Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	3
		0	0	19.5		
2	none	0	0	19.5	1.35	3
		0	0	39.		
3	none	0	0	39.	1.01	3
		0	0	58.5		
4	none	0	0	58.5	.67	3
		0	0	78.		
5	none	0	0	78.	.34	3
		0	0	97.5		
6	none	70.	75.	0	1.92	3
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	3
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	3
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	3
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	3
		70.	75.	93.5		
11	none	140.	75.	0	1.68	3
		140.	75.	19.		
12	none	140.	75.	19.	1.35	3
		140.	75.	38.		
13	none	140.	75.	38.	1.01	3
		140.	75.	57.		
14	none	140.	75.	57.	.67	3
		140.	75.	76.		
15	none	140.	75.	76.	.34	3
		140.	75.	95.		

Number of wires = 15

current nodes = 45

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	6.23333	3	6.5
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION

Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.31	0	1	.0173148	.0180556

Sources

source	node	sector	magnitude	phase	type
1	31	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-1,215.	0	0	0
2	16	0	-1,215.	0	0	0

Method of Moments Model Details for Directional Antenna - KMKY

The array of towers was modeled using Expert MININEC Broadcast Professional Version 14.5 with the characteristics that were verified by the individual tower impedance measurements. Calculations were made to determine the complex voltage values for sources located at the base insulator level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern. The following pages contain details of the method of moments model of the directional antenna pattern.

Tower	Wires	Base Node
1	1 - 5	1
2	6 - 10	16
3	11 - 15	31

It should be noted that voltages and currents shown on the tabulations that are not specified as “rms” values are the corresponding peak values.

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MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.31 MHz

	field ratio	
tower	magnitude	phase (deg)
1	1.	0
2	2.	126.
3	1.	-82.

VOLTAGES AND CURRENTS - rms

source	voltage		current	
node	magnitude	phase (deg)	magnitude	phase (deg)
1	524.116	88.9	5.80922	360.
16	322.994	152.5	16.1503	131.1
31	36.0882	204.6	8.59401	278.6

Sum of square of source currents = 736.871
Total power = 5,000. watts

NOTE: The array synthesis calculations (above) were performed to solve for the base voltage drives required to produce the specified field parameters. The following information is from the final model.

GEOMETRY

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	3
		0	0	19.5		
2	none	0	0	19.5	1.35	3
		0	0	39.		
3	none	0	0	39.	1.01	3
		0	0	58.5		
4	none	0	0	58.5	.67	3
		0	0	78.		
5	none	0	0	78.	.34	3
		0	0	97.5		
6	none	70.	75.	0	1.92	3
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	3
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	3
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	3
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	3
		70.	75.	93.5		
11	none	140.	75.	0	1.68	3
		140.	75.	19.		
12	none	140.	75.	19.	1.35	3
		140.	75.	38.		

13	none	140.	75.	38.	1.01	3
		140.	75.	57.		
14	none	140.	75.	57.	.67	3
		140.	75.	76.		
15	none	140.	75.	76.	.34	3
		140.	75.	95.		

Number of wires = 15
current nodes = 45

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	6.23333	3	6.5
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.31	0	1	.0173148	.0180556

Sources

source	node	sector	magnitude	phase	type
1	1	1	741.212	88.9	voltage
2	16	1	456.783	152.5	voltage
3	31	1	51.0365	204.6	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							
1.31	1.6055	90.208	90.222	89.	132.54	-.13108	-15.268
source = 2; node 16, sector 1							
1.31	18.633	7.2662	19.999	21.3	2.749	-6.6224	-1.066
source = 3; node 31, sector 1							
1.31	1.1624	-4.0351	4.1992	286.1	43.294	-.40132	-10.542

CURRENT rms
Frequency = 1.31 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	5.80919	360.	5.80919	-4.67E-03
2	0	0	6.5	7.07487	359.8	7.07482	-.0276173
3	0	0	13.	7.29634	359.8	7.29628	-.0300166
END	0	0	19.5	7.39972	359.8	7.39966	-.0291057
2J1	0	0	19.5	7.39972	359.8	7.39966	-.0291057
5	0	0	26.	7.3297	359.8	7.32966	-.0249721
6	0	0	32.5	7.11698	359.9	7.11696	-.01809
END	0	0	39.	6.74646	359.9	6.74646	-8.7E-03
2J2	0	0	39.	6.74646	359.9	6.74646	-8.7E-03
8	0	0	45.5	6.33313	360.	6.33313	-1.5E-04
9	0	0	52.	5.78307	.1	5.78306	9.E-03
END	0	0	58.5	5.07597	.2	5.07594	.0178594

2J3	0	0	58.5	5.07597	.2	5.07594	.0178594
11	0	0	65.	4.43801	.3	4.43795	.0232225
12	0	0	71.5	3.66826	.4	3.66817	.0265307
END	0	0	78.	2.74241	.5	2.74228	.0263021
2J4	0	0	78.	2.74241	.5	2.74228	.0263021
14	0	0	84.5	2.00713	.7	2.007	.0228951
15	0	0	91.	1.13777	.8	1.13767	.0152462
END	0	0	97.5	0	0	0	0
GND	18.1173	-67.6148	0	16.1503	131.1	-10.6266	12.1617
17	18.1173	-67.6148	6.23333	16.4133	128.1	-10.1371	12.9088
18	18.1173	-67.6148	12.4667	16.2099	127.5	-9.86054	12.8659
END	18.1173	-67.6148	18.7	15.7989	126.7	-9.4502	12.661
2J6	18.1173	-67.6148	18.7	15.7989	126.7	-9.4502	12.661
20	18.1173	-67.6148	24.9333	15.26	126.2	-9.02219	12.3073
21	18.1173	-67.6148	31.1667	14.5059	125.8	-8.48302	11.7669
END	18.1173	-67.6148	37.4	13.5109	125.4	-7.81834	11.019
2J7	18.1173	-67.6148	37.4	13.5109	125.4	-7.81834	11.019
23	18.1173	-67.6148	43.6333	12.5277	125.	-7.19071	10.2585
24	18.1173	-67.6148	49.8667	11.3298	124.7	-6.45043	9.3143
END	18.1173	-67.6148	56.1	9.88536	124.4	-5.58139	8.15895
2J8	18.1173	-67.6148	56.1	9.88536	124.4	-5.58139	8.15895
26	18.1173	-67.6148	62.3333	8.60099	124.1	-4.8248	7.12028
27	18.1173	-67.6148	68.5667	7.10664	123.9	-3.95954	5.90139
END	18.1173	-67.6148	74.8	5.36001	123.6	-2.96469	4.46547
2J9	18.1173	-67.6148	74.8	5.36001	123.6	-2.96469	4.46547
29	18.1173	-67.6148	81.0333	3.92823	123.4	-2.16066	3.28064
30	18.1173	-67.6148	87.2667	2.26863	123.1	-1.24026	1.89959
END	18.1173	-67.6148	93.5	0	0	0	0
GND	36.2347	-135.23	0	8.594	278.6	1.27993	-8.49815
32	36.2347	-135.23	6.33333	8.45392	278.4	1.23349	-8.36345
33	36.2347	-135.23	12.6667	8.27137	278.3	1.19724	-8.18427
END	36.2347	-135.23	19.	7.97222	278.2	1.14225	-7.88997
2J11	36.2347	-135.23	19.	7.97222	278.2	1.14225	-7.88997
35	36.2347	-135.23	25.3333	7.63431	278.2	1.08376	-7.55699
36	36.2347	-135.23	31.6667	7.18869	278.1	1.00949	-7.11746
END	36.2347	-135.23	38.	6.62091	278.	.917754	-6.557
2J12	36.2347	-135.23	38.	6.62091	278.	.917754	-6.557
38	36.2347	-135.23	44.3333	6.08569	277.9	.833679	-6.02832
39	36.2347	-135.23	50.6667	5.44334	277.8	.735427	-5.39343
END	36.2347	-135.23	57.	4.67852	277.6	.621718	-4.63703
2J13	36.2347	-135.23	57.	4.67852	277.6	.621718	-4.63703
41	36.2347	-135.23	63.3333	4.02887	277.5	.527858	-3.99414
42	36.2347	-135.23	69.6667	3.27826	277.4	.422488	-3.25092
END	36.2347	-135.23	76.	2.40917	277.3	.304426	-2.38986
2J14	36.2347	-135.23	76.	2.40917	277.3	.304426	-2.38986
44	36.2347	-135.23	82.3333	1.74363	277.1	.216945	-1.73008
45	36.2347	-135.23	88.6667	.977291	277.	.11948	-.96996
END	36.2347	-135.23	95.	0	0	0	0

Sampling System Measurements – KMKY

Impedance measurements were made of the antenna monitor sampling system using a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler in a calibrated measurement system. The measurements were made looking into the antenna monitor ends of the sampling lines for two conditions – with them open circuited at their tower ends and with them connected to the sampling devices at the tower bases.

The following table shows the frequencies above and below the carrier frequency where resonance – zero reactance corresponding with low resistance – was found. As the length of a distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent frequencies of resonance, and frequencies of resonance occur at odd multiples of 90 degrees electrical length, the sampling line length at the resonant frequency below carrier frequency – which is the closest one to the carrier frequency in terms of the ratio of frequencies – was found to be 270 electrical degrees. The electrical lengths at carrier frequency appearing in the table below were calculated by ratioing the frequencies.

Tower	Sampling Line Open-Circuited Resonance Below 1310 kHz (kHz)	Sampling Line Open-Circuited Resonance Above 1310 kHz (kHz)	Sampling Line Calculated Electrical Length at 1310 kHz (degrees)	1310 KHz Measured Impedance with Toroid Connected (Ohms)
1 (W)	823.200	2481.76	143.2	48.8 – j 0.1
2 (C)	822.240	2478.56	143.4	49.2 – j 0.4
3 (E)	827.040	2494.24	142.6	49.5 – j 0.4

The sampling line lengths meet the requirement that they be equal in length within 1 electrical degree.

The characteristic impedance was calculated using the following formula, where $R_1 + j\,X_1$ and $R_2 + j\,X_2$ are the measured impedances at the +45 and –45 degree offset frequencies, respectively:

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

Tower	-45 Degree Offset Frequency (kHz)	-45 Degree Measured Impedance (Ohms)	+45 Degree Offset Frequency (kHz)	+45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
1 (W)	411.60	0.49 –j 50.46	1234.8	2.55 +j 50.29	50.4
2 (C))	411.12	0.49 –j 50.31	1233.3	2.59 +j 50.14	50.3
3 (E)	413.52	0.53 –j 50.46	1240.6	2.56 +j 50.19	50.4

The sampling line measured characteristic impedances meet the requirement that they be equal within 2 ohms.

The toroidal transformers were calibrated by measuring their outputs with a common reference signal using a Hewlett-Packard 8753C network analyzer in a calibrated measurement system. They were placed side-by-side with a conductor carrying the reference signal passing through them and their outputs were fed into the A and B receiver inputs of the analyzer which was configured to measure the relative ratios and phases of their output voltages. The following results were found for carrier frequency, 1310 kilohertz:

Tower	Toroid Ratio	Toroid Phase (Degrees)
1	1.011	+0.49
2	Reference	Reference
3	1.005	+0.33

Delta type TCT-1 toroidal transformers are rated for absolute magnitude accuracy of +/- 2% and absolute phase accuracy of +/- 3 degrees. As the maximum measured transformer-to-transformer variations among the four were no more than 0.2 percent and 0.2 degree, they provide far more accurate relative indications than could be the case within their rated accuracies.

Reference Field Strength Measurements – KMKY

Reference field strength measurements were made at three locations along each radial at the historical KMKY monitor point azimuths, 50, 75 and 115 degrees true. Additionally, measurements were made on a major lobe radial at 255.0 degrees true. The measured field strengths, descriptions and GPS coordinates for the reference measurement points are shown on the following pages.

The KMKY directional antenna pattern does not have pronounced radiation minima or maxima over its span of suppressed radiation. Its standard pattern horizontal plane field values remain within a range of less than +/- 5 percent of the median value over a span of 160 degrees centered on the eastern tower line. Good field strength measurement locations are scarce near the KMKY array. Because of the location of the site, measurement radials from it must traverse long water paths and rugged terrain thereafter with heavily congested roadways on much of the accessible land in some directions. The newly authorized directional antenna pattern shape is virtually unchanged from that of the old licensed pattern, as the tower locations are unchanged and its theoretical ratios and phases remain within the normal operating range tolerances of three degrees phase and five percent ratio of the licensed pattern parameters. It is believed that reference field strength measurements along the radials which have been monitored and measured for proofs in the past will serve well for the required reference field strength measurements. A waiver of the requirement of Section [1]73.151(c)(2)(ii)(3) of the FCC Rules to have reference field strength measurements at precise pattern minima and maxima is requested, if necessary. It is noted that current FCC policy does not require measurements at all pattern maxima and minima over spans such as the "back side" of the KMKY directional antenna pattern, despite the stated requirement of the Rule, as measurements on only radials specified to have monitor points in addition to a single major lobe radial are deemed to meet the requirement for MoM proofing. It is believed that the reference field strength measurements on the radials included herein meet the spirit of that policy.

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[1] "Reference field strength measurement locations shall be established in directions of pattern minima and maxima. On each radial corresponding to a pattern minimum or maximum, there shall be at least three measurement locations. The field strength shall be measured at each reference location at the time of the proof of performance. The license application shall include the measured field strength values at each reference point, along with a description of each measurement location, including GPS coordinates and datum reference."

Reference Field Strength Measurements

KMKY DA-1

Radial (Deg.)	Point	Dist. (Km)	Field (mV/m)	Coordinates (NAD 83)		Description
				N	W	
50	1	3.99	20.3	37-50-50.1	122-17-10.1	Ocean and un-named street in front of gray garage door.
	2	6.92	24.7	37-51-50.9	122-15-38.0	Blake and Dana Streets at 2515.
	3	7.81	30.2	37-52-04.4	122-15-04.9	Piedmont and Channing in front of fraternity house.
75	1	3.93	54.1	37-49-58.8	122-16-38.4	4210 42nd Street around front on Adeline Street.
	2	5.42	25.6	37-50-12.0	122-15-39.8	5009 Clark Avenue.
	3	8.09	22.8	37-50-34.7	122-13-54.4	6210 Golden Gate Avenue at hydrant.
115	1	2.74	25.2	37-48-49.8	122-17-31.6	On Pearita Street at 1717.
	2	3.86	35.4	37-48-34.0	122-16-50.1	On Market Street halfway between Bus Stop 88 and apartment building.
	3	5.67	10.9	37-48-09.2	122-15-43.0	Madion Street on sidewalk directly in front of "Lake Chalet."
255	1	4.52	207	37-48-28.8	122-21-04.3	On Treasure Island at turn in to restaurant area.
	2	7.74	128	37-48-15.7	122-23-50.6	On west sidewalk of Embarcadero in front of delivery dock door.
	3	8.90	117	37-48-12.1	122-25-06.3	On Leavewood Street at loading door, just before Fielding Street.

All of the field strength observations were made on March 9, 2012 by Mr. Lyndon Willoughby. The Potomac Instruments PI-4100 field strength meter used for the measurements, serial number 122, was most recently calibrated by its manufacturer on May 10, 2011.

Direct Measurement of Power - KMKY

Common point impedance measurements were made using a calibrated network analyzer measurement system employing a Hewlett-Packard 8753C vector network analyzer and a Tunwall Radio directional coupler. The common point impedance was adjusted to 51.5 – j 4.0 ohms for the directional pattern. The reactance was set to – j 4.0 to compensate for series inductance in the circuit between the transmitter and the common point in the phasor cabinet, including the main-auxiliary transmitter switching contactor, in order to provide a non-reactive load for the transmitter's output port at carrier frequency.

Section 73.51(b)(1) of the FCC Rules specifies that the authorized antenna input power of a directional antenna for up to 5.0 kilowatts nominal power shall be increased by 8 percent above the nominal power. For the 5.0 kilowatt directional antenna pattern, the common point current was calculated for 5,400 watts antenna input power.

Antenna Monitor and Sampling System - KMKY

The base current sampling devices are Delta Electronics Type TCT-1 shielded toroidal transformers located at the ATU output reference points. The TCT-1 transformers have a sensitivity of 0.5 volt per ampere of RF current. The toroids are connected through equal length ½ inch foam heliax sampling lines to the antenna monitor. The outdoor portions of the sampling lines run along the elevated catwalk beside the tower line and are exposed to identical environmental conditions.

The antenna monitor is a Potomac Instruments model AM-1901. It was calibrated by comparing the tower current ratios and phases observed using a Hewlett Packard 8753C network analyzer, with its reference signal amplified and fed into the directional antenna common point, to those observed on the antenna monitor under full power operation. The network analyzer was calibrated using its internal calibration function prior to the observations, which were made with the tower 2 sampling line connected to its "B" receiver input and the tower 1 and 3 sampling lines alternately connected to its "A" receiver input. The measurements with the antenna monitor were made immediately upon activation of the transmitter after a cool-off period, during which the low power network analyzer measurements were made, to avoid warm-up effects. For that reason, the parameters observed for the antenna monitor may differ slightly from those that may be observed under normal operation.

Tower	Network Analyzer Measured		Antenna Monitor Measured	
	Ratio	Phase	Ratio	Phase
1	0.325	-131.5	0.327	-131.7
2	1.000	0.0	1.000	0.0
3	0.525	+146.3	0.526	+146.5

The network analyzer and antenna monitor agreed within less than the antenna monitor manufacturer's rated accuracies of 0.010 ratio and 1.0 degree phase.

Radio Frequency Radiation Considerations - KMKY

The operation of KMKY will not result in the exposure of workers or the general public to levels of radio frequency radiation in excess of the limits specified in 47 CFR 1.1310. The antenna tuning enclosures and ground system are as they were before. The tower heights have been decreased from 96.0 to 90.1 electrical degrees, both being nominally 0.25 wavelength height for the purposes of analysis using Table 2 of Supplement A to FCC OET Bulletin 65 (Edition 97-01) to calculate distances for access restriction. Boundaries to restrict access to areas near the towers and components that carry RF current remain in place. The radio frequency protection measures that have been previously reported to the FCC remain in effect. The KMKY facility is, therefore, in full compliance with the FCC's requirements with regard to radio frequency radiation exposure.

Stability Analysis of Self-Supporting Tower Model - KMKY

The method of moments model of the KMKY array uses a "wedding cake" characterization of each tower to account for its vertical taper. The towers are equal in physical height. Five wires, cascading down in radius with increasing height, were used to represent each tower. Each wire was modeled with three segments.

All wire segments, when checked using the "problem definition evaluation" function of MININEC Broadcast Professional Version 14.5, have no errors relative to the software's specified geometry guidelines. As shown on the evaluation summary of the following page, however, "warnings" are given due to the segment length-to-radius ratio for certain of the largest radius segments. Under the guidelines, which consider a segment length-to-radius ratio under 2.0 to constitute an error, a warning is given for a ratio between 2.0 and 8.0 as a cautionary measure.

In order to evaluate the stability of the KMKY directional antenna Method of Moments model, additional models were run with the same wire lengths and radius values but with smaller and larger numbers of segments per wire. The model used for analyzing the KMKY directional antenna pattern has 15 segments per tower. Additional models were run with two segments per wire, having a total of 10 segments per tower, and with four segments per wire, having a total of 20 segments per tower.

Tower 2, which is square in cross-section rather than triangular like towers 1 and 3, has the largest bottom-wire modeled radius. The tower 2 base impedance was calculated using each of the three stability evaluation models. Towers 1 and 3 had loads at their bases having the reactances that were calculated for them using the base circuit models for the open circuited towers of the array.

Segments Per Tower	Minimum Segment Length to Radius Ratio	Resistance (Ohms)	Difference (Ohms)	Reactance (Ohms)	Difference (Ohms)
10	3.10	32.456	0.007	-5.630	0.837
15	2.06	32.463	Reference	-4.793	Reference
20	1.55	32.281	0.182	-4.546	0.247

The MININEC modeled base resistances and reactances remain well within the +/- 2 ohm and +/- 4 percent range required for matching measured and modeled resistance and reactance by the FCC Rules. Remaining essentially unchanged with segment lengths both smaller and greater than used in the KMKY directional antenna pattern model, the real and imaginary components indicate convergence of the results. The model is therefore valid with regard to the characteristics of the self-supporting towers of the KMKY array.

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PROBLEM DEFINITION EVALUATION
maximum frequency = 1.31 MHz
shortest wavelength = 228.855 meters
number of wires =  15

INDIVIDUAL WIRES
segment length to wavelength ratio: No detected violations!
segment length to radius ratio:
  wire  1  - warning  2.459586
  wire  2  - warning  3.060817
  wire  3  - warning  4.091193
  wire  4  - warning  6.167317
  wire  6  - warning  2.063845
  wire  7  - warning  2.507963
  wire  8  - warning  3.195629
  wire  9  - warning  4.40287
  wire  10  - warning  7.076037
  wire  11  - warning  2.396519
  wire  12  - warning  2.982335
  wire  13  - warning  3.98629
  wire  14  - warning  6.009182
radius to wavelength ratio:         No detected violations!
checking for wires in groud plane:  No detected violations!

WIRE JUNCTIONS
junction segment length ratio:      No detected violations!
junction radius ratio:              No detected violations!

ELECTRICAL DESCRIPTION
    No detected violations!
```

Method of Moments Model Details for Stability Analysis - KMKY

The models used for stability analysis of the method of moments representation of the self-supporting towers of the KMKY array appear on the following pages. The model used for analyzing the KMKY directional antenna pattern has 15 segments per tower. Additional models were run with two segments per wire, having a total of 10 segments per tower, and with four segments per wire, having a total of 20 segments per tower.

Stability Analysis for 10 Segments per Tower

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 11, sector 1							
1.31	32.456	-5.6303	32.94	350.2	1.5738	-13.036	-.22141

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	2
		0	0	19.5		
2	none	0	0	19.5	1.35	2
		0	0	39.		
3	none	0	0	39.	1.01	2
		0	0	58.5		
4	none	0	0	58.5	.67	2
		0	0	78.		
5	none	0	0	78.	.34	2
		0	0	97.5		
6	none	70.	75.	0	1.92	2
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	2
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	2
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	2
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	2
		70.	75.	93.5		
11	none	140.	75.	0	1.68	2
		140.	75.	19.		
12	none	140.	75.	19.	1.35	2
		140.	75.	38.		
13	none	140.	75.	38.	1.01	2
		140.	75.	57.		
14	none	140.	75.	57.	.67	2
		140.	75.	76.		
15	none	140.	75.	76.	.34	2
		140.	75.	95.		

Number of wires = 15
current nodes = 30

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	9.35	3	9.75
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION

Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.31	0	1	.0259722	.0270833

Sources

source	node	sector	magnitude	phase	type
1	11	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-1,215.	0	0	0
2	21	0	-1,215.	0	0	0

Stability Analysis for 15 Segments per Tower

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 16, sector 1							
1.31	32.463	-4.7932	32.815	351.6	1.5644	-13.148	-.21564

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	3
		0	0	19.5		
2	none	0	0	19.5	1.35	3
		0	0	39.		
3	none	0	0	39.	1.01	3
		0	0	58.5		
4	none	0	0	58.5	.67	3
		0	0	78.		
5	none	0	0	78.	.34	3
		0	0	97.5		
6	none	70.	75.	0	1.92	3
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	3
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	3
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	3
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	3
		70.	75.	93.5		
11	none	140.	75.	0	1.68	3
		140.	75.	19.		
12	none	140.	75.	19.	1.35	3
		140.	75.	38.		
13	none	140.	75.	38.	1.01	3
		140.	75.	57.		
14	none	140.	75.	57.	.67	3
		140.	75.	76.		
15	none	140.	75.	76.	.34	3
		140.	75.	95.		

Number of wires = 15
current nodes = 45

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	6.23333	3	6.5
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION

Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.31	0	1	.0173148	.0180556

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	-1,215.	0	0	0
2	31	0	-1,215.	0	0	0

Stability Analysis for 20 Segments per Tower

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 21, sector 1							
1.31	32.281	-4.5455	32.6	352.	1.5706	-13.074	-.21945

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.68	4
		0	0	19.5		
2	none	0	0	19.5	1.35	4
		0	0	39.		
3	none	0	0	39.	1.01	4
		0	0	58.5		
4	none	0	0	58.5	.67	4
		0	0	78.		
5	none	0	0	78.	.34	4
		0	0	97.5		
6	none	70.	75.	0	1.92	4
		70.	75.	18.7		
7	none	70.	75.	18.7	1.58	4
		70.	75.	37.4		
8	none	70.	75.	37.4	1.24	4
		70.	75.	56.1		
9	none	70.	75.	56.1	.9	4
		70.	75.	74.8		
10	none	70.	75.	74.8	.56	4
		70.	75.	93.5		
11	none	140.	75.	0	1.68	4
		140.	75.	19.		
12	none	140.	75.	19.	1.35	4
		140.	75.	38.		
13	none	140.	75.	38.	1.01	4
		140.	75.	57.		
14	none	140.	75.	57.	.67	4
		140.	75.	76.		
15	none	140.	75.	76.	.34	4
		140.	75.	95.		

Number of wires = 15
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	4.675	3	4.875
radius	5	.34	6	1.92

ELECTRICAL DESCRIPTION

Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.31	0	1	.0129861	.0135417

Sources

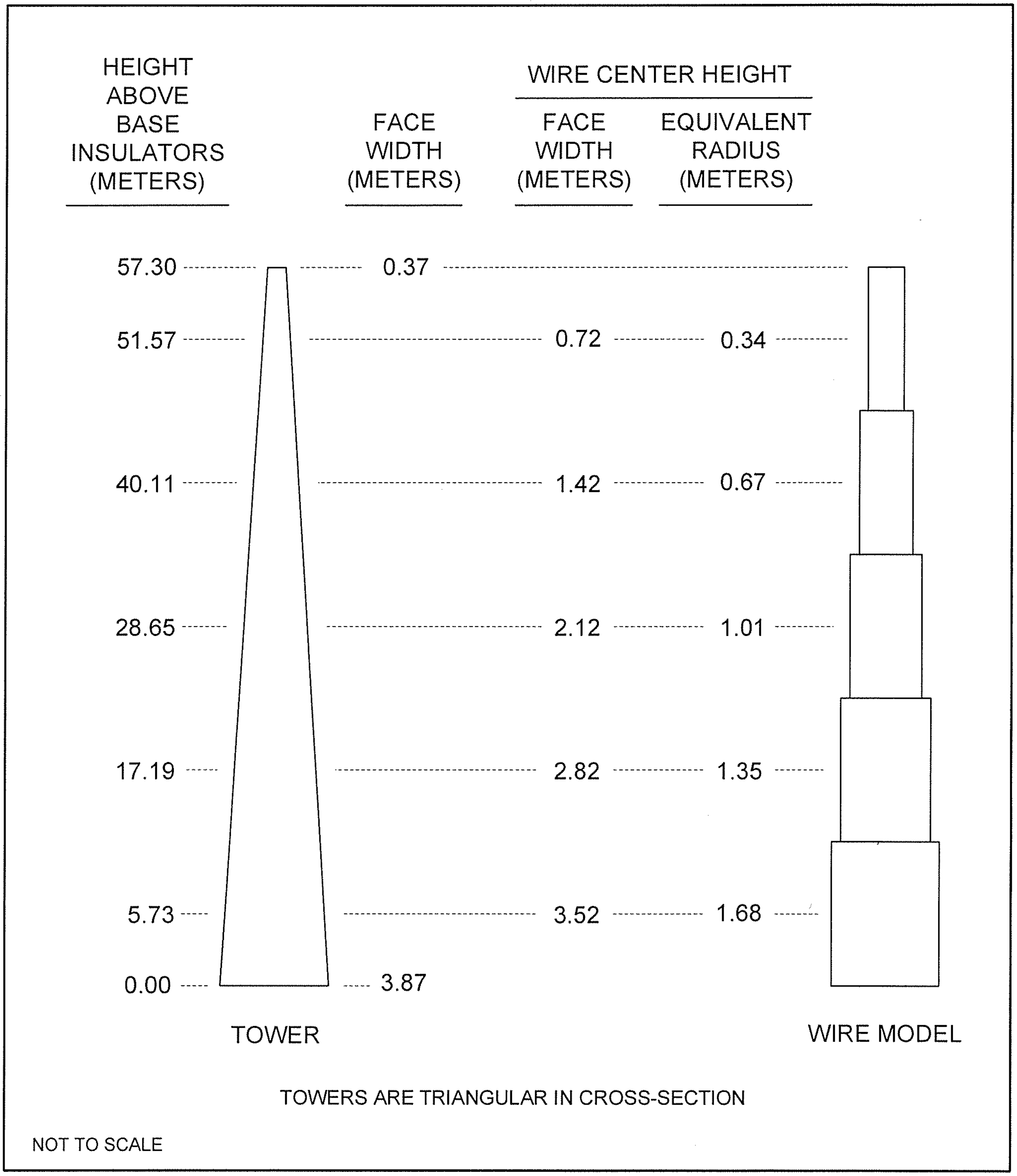
source	node	sector	magnitude	phase	type
1	21	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-1,215.	0	0	0
2	41	0	-1,215.	0	0	0

Self-Supporting Tower Physical Details - KMKY

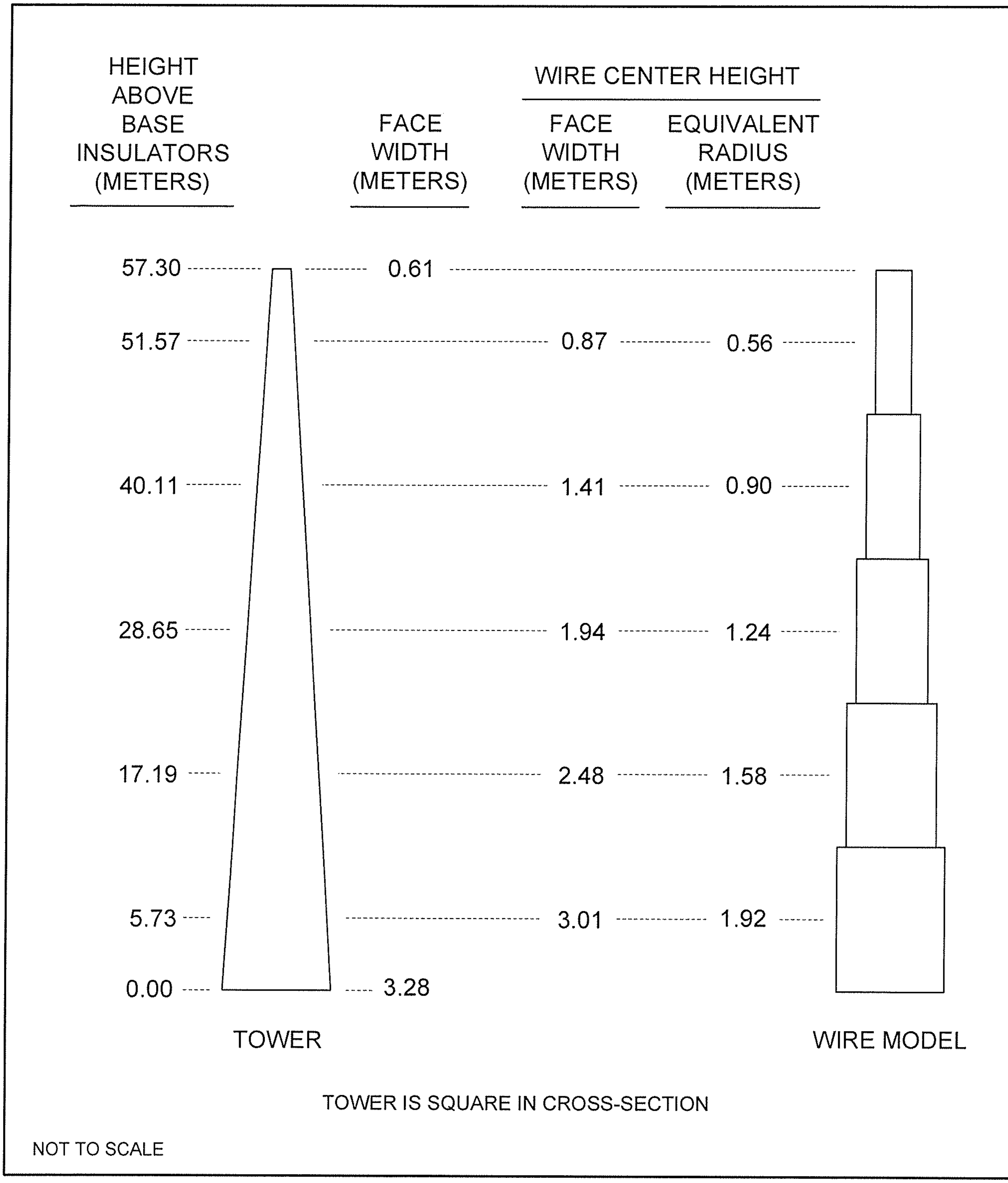
The physical details of the KMKY self-supporting towers and the five-wire models used to represent them in the directional antenna method of moments model are shown on the following pages.



SELF-SUPPORTING TOWER PHYSICAL DETAILS
FOR TOWERS 1 (W) AND 3 (E)

RADIO STATION KMKY
OAKLAND, CALIFORNIA
1310 KHZ 5 KW DA-1 U

du Treil, Lundin & Rackley, Inc. Sarasota, Florida



SELF-SUPPORTING TOWER PHYSICAL DETAILS
FOR TOWER 2 (C)

RADIO STATION KMKY
OAKLAND, CALIFORNIA
1310 KHZ 5 KW DA-1 U

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
RD San Francisco Assets, 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
KMKY	BP-20100702CQV	1310	UNLIIMITED	5.0	5.0

2. Station location	
State	City or Town
California	Oakland

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
CA	Alameda	Oakland	Toll Bridge Plaza - Oakland Road

4. Main studio location			
State	County	City or Town	Street address (or other identification)
CA	Alameda	San Carlos	963 Industrial Road, Suite I

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
CA	Alameda	San Carlos	963 Industrial Road, Suite I

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.
TECH EXHIBIT

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
10.24	10.24

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
51.5	51.5	-j 4.0	-j 4.0

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	-131.9	-131.9	0.335	0.335	N/A	N/A
2	0.0	0.0	1.000	1.000	N/A	N/A
3	+146.7	+146.7	0.537	0.537	N/A	N/A
					-	

Manufacturer and type of antenna monitor: Potomac Instruments AM-1901

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.
Self-supporting, tapered	57.3	T1 & T3 = 60.4, T2 = 59.4	T1 & T3 = 60.4, T2 = 59.4	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 37 ° 49 ' 27 "	West Longitude 122 ° 19 ' 10 "

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 with regard to construction. Computer modeled proof run to satisfy CP condition 1, as permitted by new FCC Rules.

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

New construction

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
Ronald D. Rackley, P.E.	[signature]
Address (include ZIP Code) du Treil, Lundin & Rackley, Inc. 201 Fletcher Avenue Sarasota, FL 34237	Date April 27, 2012 Telephone No. (Include Area Code) 941-329-6000

☐ Technical Director ☑ Registered Professional Engineer

☐ Chief Operator ☐ Technical Consultant

☐ Other (specify)