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2017 MAR 23 P 3:30

March 22, 2017

FRANCISCO R. MONTERO
(703) 812-0480
MONTERO@FHHLAW.COM

Marlene H. Dortch, Esquire
Secretary
Federal Communications Commission
445 12th Street, S.W., The Portals
Washington, D.C. 20554
Attention: Audio Division

Re: KZSF (AM), San Jose (Facility ID 68841)
Form 302-AM – Direct Measurement Application

Dear Ms. Dortch:

Transmitted herewith, in triplicate, on behalf of Carlos A. Duharte, the licensee of AM Station KZSF, Facility ID 68841, San Jose, California, is an application on FCC 302-AM to return to direct measurement of power using the method of moments model. No filing fee is required with this application.

Should any questions arise concerning this matter, please contact this office.

Very truly yours,
FLETCHER, HEALD & HILDRETH, PLC

Francisco R. Montero
Counsel for Carlos A. Duharte

Enclosures
cc: KZSF Public Inspection File

918746

ORIGINAL

Federal Communications Commission
Washington, D. C. 20554

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

Accepted / Filed

FOR FCC USE ONLY

MAR 22 2017

Federal Communications Commission
Office of the Secretary

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY
FILE NO. BZ-20170322ABL

SECTION I - APPLICANT FEE INFORMATION

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

CARLOS A. DUHARTE

MAILING ADDRESS (Line 1) (Maximum 35 characters)
2343 BERING DR.

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
SAN JOSE	CA	95131

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
(408) 546-7201	KZSF	68841

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): DIRECT MEASUREMENT/MoM

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
	0001	$	

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
	$	

0009634924

2017 MAR 23 P 3:30

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT CARLOS A DUHARTE		
MAILING ADDRESS 2343 BERING DR.		
CITY SAN JOSE	STATE CA	ZIP CODE 95131

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
KZSF	SAN JOSE, CA	N/A	N/A	N/A

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

☐ Yes ☐ No

Exhibit No. N/A

If No, explain in an Exhibit.

NOT APPLICABLE

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

☐ Yes ☐ No

Exhibit No. N/A

If No, state exceptions in an Exhibit. NOT APPLICABLE

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

Exhibit No. N/A

If Yes, explain in an Exhibit.

NOT APPLICABLE

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. N/A

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

☐ Yes ☑ No

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

Exhibit No. N/A

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

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No. N/A

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	
CARLOS DUHARTE		
Title	Date	Telephone Number
INDIVIDUAL	3/17/2017	(408) 546-7201

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
CARLOS A. DUHARTE

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
KZSF	N/A	1370	UNLIMITED	5.0	5.0

2. Station location	
State	City or Town
CALIFORNIA	SAN JOSE

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
CA	SANTA CLARA	SAN JOSE	501 WOOSTER AVE

4. Main studio location			
State	County	City or Town	Street address (or other identification)
CA	SANTA CLARA	SAN JOSE	2343 BERING DR., SAN JOSE, CA 95131

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
CA	SANTA CLARA	SAN JOSE	2343 BERING DR., SAN JOSE, CA 95131

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. ENGR REPORT

8. Operating constants:	
RF common point or antenna current (in amperes) without modulation for night system 10.4	RF common point or antenna current (in amperes) without modulation for day system 10.4
Measured antenna or common point resistance (in ohms) at operating frequency Night 50.0 Day 50.0	Measured antenna or common point reactance (in ohms) at operating frequency Night +/-J0 Day +/-J0

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
1C	87.1	87.1	1.252	1.252	N/A	N/A
2E	137.8	137.8	0.533	0.533		
3N	36.4	36.4	0.386	0.386		
4W	0.0	0.0	1.0	1.0		

Manufacturer and type of antenna monitor: POTOMAC INSTRUMENTS AM-1901

SECTION III - Page 2

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

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
UNIFORM CROSS SECTION GUYED	59.4	60	60	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	West Longitude
37 ° 21 ' 28 "	121 ° 52 ' 17 "

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. A

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

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

NO CHANGE FROM EXISTING LICENSE

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

MODIFICATIONS TO SYSTEM ALLOWING ADDITION OF KLOK(AM) TO ARRAY

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)
BERT GOLDMAN	Bert Goldman
Address (include ZIP Code) 560 PERKINS WAY AUBURN, CA 95603	Date 3/17/2017
	Telephone No. (Include Area Code) (214) 395-5067

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☑ Technical Consultant

☐ Other (specify)

ENGINEERING STATEMENT
IN SUPPORT OF 302-AM

APPLICATION FOR LICENSE EMPLOYING
MOMENT METHOD MODELING

KZSF, 1370kHz
Return to Direct Measurement
Following KLOK Construction

5,000 Watt DA-D, DA-N

San Jose, Ca.

March, 2017

ENGINEERING STATEMENT IN SUPPORT OF 302-AM
APPLICATION FOR DIRECT MEASUREMENT

KZSF, 1370kHz

March, 2017

Table of Contents

SUMMARY

The following engineering statement has been prepared on behalf of Carlos A. Duharte, licensee of standard broadcast station KZSF, FCC ID 68841, 1370kHz, San Jose, CA in support of an application to operate pursuant to new parameters as determined by a new Method of Moments model, following the addition of KLOK (AM) to the existing antenna system which includes KSJX and KZSF. This application is being filed concurrently with the 302 applications for KLOK and KSJX reflecting the final measured parameters following the installation of the KLOK filters and modification of the KSJX and KZSF filters and phasing equipment.

The KLOK phasor was installed in a new building constructed by KLOK, the KLOK filters were adjusted and inserted in series with the feed from the KSJX and KZSF (existing stations') filters. The feed to each existing tower was re-worked and braised to the towers (a 4-5 turn loop was removed from the feeds to the towers), The existing sample lines for KZSF were measured and verified within one degree, all sampling toroids were measured and determined to be accurate, the KZSF antenna monitor was checked and verified within manufacturer specifications and the operating impedance bridges in each station's common point were verified to be accurate.

The antenna system has been adjusted to produce monitoring system parameters which are within ± 5% in field ratio and ± 3° in phase of the modeled values as required by 73.151(c)(2)(ii).

Exhibit 1 – Station Operation

DESCRIPTION OF KZSF TRANSMISSION FACILITIES AS CONSTRUCTED

RF Power Day, nominal	5kW
RF Power night, nominal	5kW
RF Common Point DAY	10.4a, 50Ω common point resistance (5.4kW input[1])
RF Common Point NIGHT	10.4a, 50Ω common point resistance (5.4kW input)
TOWERS[2]	Electrical , four towers 97.8° length. Towers 1 and 2, 24" face, towers 3 and 4, 18" face triangular uniform cross-section, guyed. Physical, four towers, each 60m length
Antenna Struct .Reg.	1215674 1215676 1215678 1215679

GROUND SYSTEM[3] Ground system consists of 120 equally spaced buried copper radials plus 7.32m by 7.32m ground screen about the base of each tower. Each radial is 60.96 m in length except where limited by property boundary. Overlapping radials shortened and bonded to copper straps.

DAY/ NIGHT MoM OPERATING PARAMETERS

TOWER	**#1**	**#2**	**#3**	**#4[4]**
Phasing	87.1°	137.8°	36.4°	0.0
Field Ratio	1.252	0.533	0.386	1.000

[1] Per FCC 73.51(b)(2), For stations with nominal powers in excess of 5 kW, the authorized antenna input power to directional antennas shall exceed the nominal power by 5.3 percent.

[2] Note that there was no survey of the property or towers taken as there has been no change in the physical locations of the towers from the currently licensed facility.

[3] From KSJX license BMML-20121003ACV. Note that the ground system was replaced in October of 2016.

[4] Reference changed from tower 1 to tower 4

Exhibit 2 – Description of sampling system

Description of Sampling System as Constructed

Samples for the antenna monitor are obtained from Delta TCT-1 (0.5V/A) toroidal current transformers mounted at the outputs of the antenna coupling units.

The TCT's were measured with a HP 8753ES Network Analyzer with a Tunwall directional coupler and have the following measured characteristics:

Tower Number	Serial No.	Magnitude	Phase
1	889	1.005	+0.61°
2	1168	1.004	+0.24°
3	586	1.006	+0.54°
4	15708	1.000	0.0°

The above measurements certify compliance within 1 percent ratio and one degree phase accuracy.

Samples are returned to the antenna monitor using equal lengths of Andrew LDF4-50A, ½" foam coaxial cable with solid copper outer shield.

All sample lines were tested and verified to be within 1° electrical length and with characteristic impedance to be within FCC guidelines. Verification of the sample lines is included below.

The phase monitor is a Potomac Instruments AM-1901 -4 antenna monitor. Phase monitor accuracy was confirmed by feeding two tower inputs at a time through a splitter and equal length jumpers to confirm equal magnitude and phase on each tower within .001 current ratio and 0.1 degrees phase.

Antenna Monitor Verification
DAY. NIGHT (Reference #4)

Tower Number	Value	Phase
1	1.001	0.0°
2	0.999	-0.1°
3	1.001	0.1°
4	1.000	0.0°

Impedance measurements were made of the antenna sampling system using an HP 8753ES Network Analyzer with a Tunwall directional coupler. The measurements were made looking into the antenna monitor ends of the sample lines with the tower ends open-circuited. All connectors were installed on the sample lines and readings were normalized to include the test leads. All sample lines were equally cut prior to installation and trimmed to achieve identical electrical length and phase stability.

The table in Exhibit 1 shows the frequencies above and below the carrier frequency where resonance, defined as zero reactance corresponding with low resistance, was found. As the length of distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent frequencies of resonance, and frequencies of resonance occur at odd multiples of 90 degrees electrical length, the sample line length at the resonant frequency below carrier frequency, which is the closest one to the carrier frequency, was found to be 270 electrical degrees. The electrical length at carrier frequency appearing below was calculated by ratioing the frequencies.

KZSF Tower Sample Measurements

	Resonance Below 1370Khz	Resonance Above 1370Khz	Calculated Electrical Length@1370kHz	Impedance into TCT @1370kHz
Tower 1	1115.15	1862.30	331.70°	47.78 -j0.77
Tower 2	1117.20	1865.30	331.10°	47.71 -j1.10
Tower 3	1117.10	1865.15	331.13°	47.29 –j1.63
Tower 4	1116.20	1865.15	331.39°	47.63 –j2.46
			Delta 0.6 deg	Delta 0.49Ω

Based upon the measurements shown above, the sample lines are within the one electrical degree requirement.

To determine the characteristic impedance values of the sample lines, open-circuited measurements were made with 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 +j X2 are the measured impedances at the +45 and -45 degree offset frequencies, respectively:

$$ZO = ((R1^2 + X1^2)^{½} \times (R2^2 + X2^2)^{½})^{½}$$

KZSF Sample Line Characteristic Impedance Measurements

	+45 Degree Offset Frequency (KHz)	+45 Degree Measured Impedance (Ohms)	-45 Degree Offset Frequency (KHz)	-45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
Tower 1	1301.0	8.01 +j49.58	0.9293	5.27 –j49.49	50.00
Tower 2	1305.8	8.60 +j49.67	0.9326	5.36 –j49.51	50.10
Tower 3	1303.3	8.09 +j49.53	0.9309	5.33 –j49.64	50.06
Tower 4	1302.3	8.32 +j49.73	0.9301	5.41 –j49.61	50.16
				MAX Impedance	50.16
				MIN Impedance	50.00

As shown above, the sample lines measured characteristic impedances meet the requirement that they be equal to 50 Ohms within +-2 ohms.

The sampling system for KZSF is type approved under 47CFR 73.68 of the FCC rules.

Exhibit 3 – Tower details and isolation circuits

The following isolation circuits are attached to the KZSF towers and have been included in the MoM analysis:

All Towers: Uniform Cross Section (no lighting). Towers 1 and 2= 24" face, Towers 3 and 4, 18" face.

Insulators:	Towers 1 and 2	Lapp Model 9012
	Towers 3 and 4	Utility insulator

Direct Measurement of Power

The common point current was measured using a Delta TCA 20/40 RF current meter permanently installed in the phasing cabinet. Common point resistance was set to 50Ω –j2. The transmitter was adjusted to yield the correct current as reflected on the 302-AM attached.

CONCLUSION

All adjustments and measurements were conducted jointly by Bertram Goldman and Kurt Gorman. Method of Moments analysis was conducted by Kurt Gorman. Both Gorman's and Goldman's qualifications are a matter of record with the Federal Communications Commission.

This application was prepared on behalf of Carlos Duharte by Bert Goldman of Goldman Engineering Management. All statements herein are true and correct to the best of his knowledge.

Bertram S. Goldman
560 Perkins Way
Auburn, CA 95603
214-395-5067
bert@bgoldman.net

Exhibit 4 – Method of Moments Computations

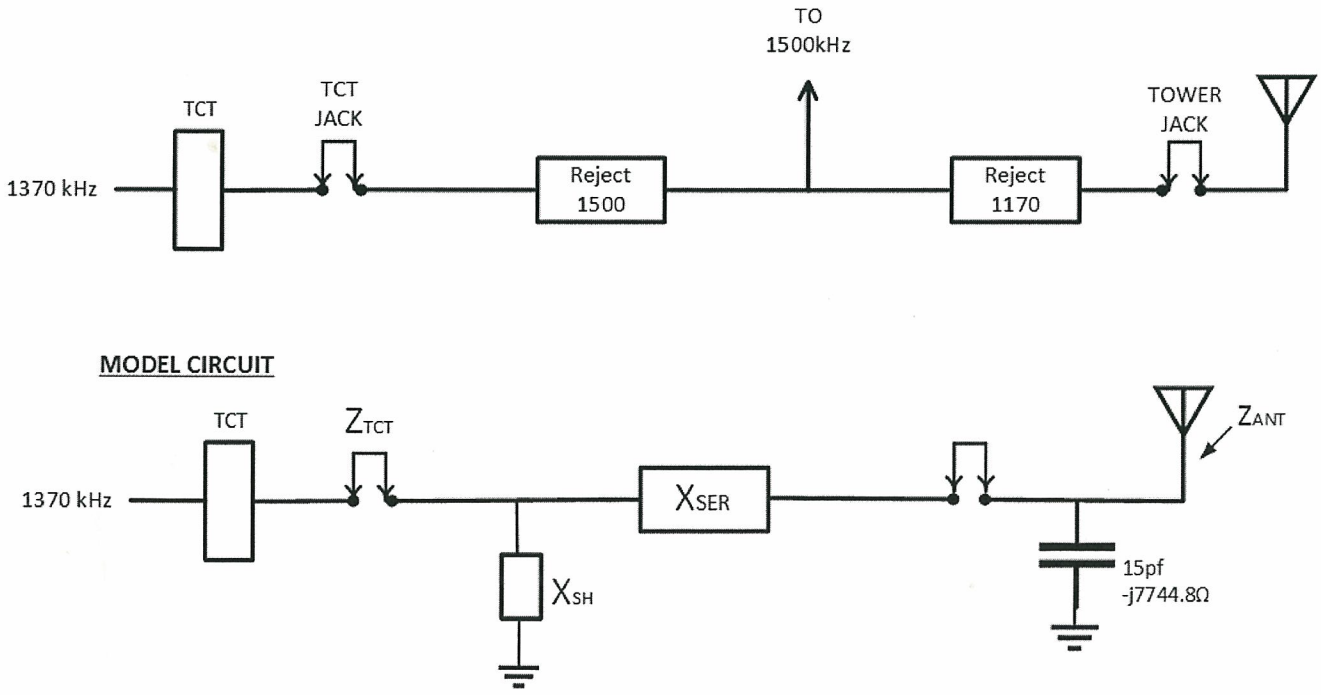
Exhibit 4A - Tower Base Impedance Measurements

The impedance of each tower was measured at the J plug at the output of the T matching network and at the TCT at the base of each tower. All impedance measurements were obtained using a HP 8753ES Network Analyzer with an external power amplifier operating on 1500kHz. The measurements were taken via remote calibration of the new sample lines after being disconnected from the Delta TCT's. All measurements were taken for each tower with all other towers open-circuited.

The following exhibit describes the measurement conditions and assumptions used in the MoM analysis:

Tower Impedance Measurements Compared to

Method of Moments Model



TOWER	X_{SH} Shunt	X_{SER} Series	Z_{TCT} Measured	Z_{TCT} Modeled	Z_{ANT} Modeled
1	-j1000	-j222	65.5 –j88.0	68.2 –j87.0	78.6 +j131.4
2	-j1500	-j238	88.3 –j101.3	86.8 –j100.8	96.0 +j135.0
3	-j15,000	-j215	82.8 –j86.3	84.1 –j85.8	82.3 +j128.0
4	-j2200	-j226	81.6 –j99.1	79.6 –j99.1	84.4 +j124.5

Exhibit 4B - Circuit Analysis for Towers Driven Individually

CUSTOMER : KZSF
NETWORK ID : TOWER 1 (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, -1000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -222.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 78.60, 131.40 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	-1000.00
2		GROUND	81.33	132.83
1		2	0.00	-222.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	129.05	106.16

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	68.18	-86.96	110.50	-51.90
INPUT CURRENT (AMPS) :	0.56	0.71	0.90	51.90
OUTPUT CURRENT (AMPS) :	0.57	0.62	0.84	47.04

INPUT/OUTPUT CURRENT RATIO = 1.0737
INPUT/OUTPUT PHASE = 4.86 DEGREES

CUSTOMER : KZSF
NETWORK ID : TOWER 2 (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, -1500.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -238.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 96.00, 135.00 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	-1500.00
2		GROUND	99.42	136.14
1		2	0.00	-238.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	118.44	99.55

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	86.84	-100.77	133.03	-49.25
INPUT CURRENT (AMPS) :	0.49	0.57	0.75	49.25
OUTPUT CURRENT (AMPS) :	0.51	0.51	0.71	44.97

INPUT/OUTPUT CURRENT RATIO = 1.0514
INPUT/OUTPUT PHASE = 4.27 DEGREES

CUSTOMER : KZSF
NETWORK ID : TOWER 3 (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00,-15000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -215.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 82.30, 128.00 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	-15000.00
2		GROUND	85.08	129.23
1		2	0.00	-215.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	128.07	101.87

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	84.11	-85.75	120.12	-45.55
INPUT CURRENT (AMPS) :	0.58	0.59	0.83	45.55
OUTPUT CURRENT (AMPS) :	0.60	0.59	0.84	44.61

INPUT/OUTPUT CURRENT RATIO = 0.9892
INPUT/OUTPUT PHASE = 0.94 DEGREES

CUSTOMER : KZSF
NETWORK ID : TOWER 4 (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, -2200.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -226.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 84.40, 124.50 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	-2200.00
2		GROUND	87.17	125.57
1		2	0.00	-226.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	114.94	104.28

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	79.61	-99.06	127.09	-51.21
INPUT CURRENT (AMPS) :	0.49	0.61	0.79	51.21
OUTPUT CURRENT (AMPS) :	0.51	0.57	0.76	48.41

INPUT/OUTPUT CURRENT RATIO = 1.0296
INPUT/OUTPUT PHASE = 2.80 DEGREES

Exhibit 4C - MoM Model Parameters

Tower	Wire No.	No. Segments	Base Node	Radius	Model Length (degrees)	Physical Length (degrees)
1	1	12	1	.300	110.0	97.8
2	2	12	13	.320	110.5	97.8
3	3	12	25	.320	109.0	97.8
4	4	12	37	.320	109.3	97.8

Insulators: Towers 1 and 2 Lapp Model 9012

Towers 3 and 4 Utility insulator

Towers 1,2 – 24" face width. Equivalent Radius = 0.291 meters

Towers 3,4 - 18" face width. Equivalent radius =0 .218 meters

Exhibit 4D - KZSF Derived and Measured Operating Parameters

KZSF Calculated Directional Operating Parameters

TOWER	Input to Base Network	TCT Value Ratio/ Phase[1]
1	5.36/+10.4°	1.252/+87.1°
2	2.28/+61.1°	.533/+137.8°
3	1.65/-40.3°	.386/+36.4°
4	4.28/ -76.7°	1.000/ 0.0°

[1]These numbers are submitted as final operating parameters on FCC 302-AM application.

Exhibit 4E - KZSF MoM Analysis

INDIVIDUAL TOWER ANALYSIS

KZSF 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	.3	12
		0	0	110.		
2	none	123.3	61.	0	.32	12
		123.3	61.	110.5		
3	none	82.2	341.	0	.32	12
		82.2	341.	109.		
4	none	91.3	251.	0	.32	12
		91.3	251.	109.3		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	9.08333	2	9.20833
radius	1	.3	2	.32

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.37	0	1	.0252315	.0255787

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	-7,744.8	0	0	0
2	25	0	-7,744.8	0	0	0
3	37	0	-7,744.8	0	0	0

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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 1, sector 1							
1.37	78.577	131.4	153.1	59.1	6.4476	-2.7162	-3.3257

KZSF 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	.3	12
		0	0	110.		
2	none	123.3	61.	0	.32	12
		123.3	61.	110.5		
3	none	82.2	341.	0	.32	12
		82.2	341.	109.		
4	none	91.3	251.	0	.32	12
		91.3	251.	109.3		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	9.08333	2	9.20833
radius	1	.3	2	.32

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.37	0	1	.0252315	.0255787

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	-7,744.8	0	0	0
2	25	0	-7,744.8	0	0	0
3	37	0	-7,744.8	0	0	0

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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 13, sector 1							
1.37	95.952	134.96	165.59	54.6	6.0718	-2.8873	-3.1368

KZSF 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	.3	12
		0	0	110.		
2	none	123.3	61.	0	.32	12
		123.3	61.	110.5		
3	none	82.2	341.	0	.32	12
		82.2	341.	109.		
4	none	91.3	251.	0	.32	12
		91.3	251.	109.3		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	9.08333	2	9.20833
radius	1	.3	2	.32

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.37	0	1	.0252315	.0255787

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	-7,744.8	0	0	0
2	13	0	-7,744.8	0	0	0
3	37	0	-7,744.8	0	0	0

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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 25, sector 1							
1.37	82.266	127.99	152.15	57.3	6.0709	-2.8878	-3.1364

KZSF 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	.3	12
		0	0	110.		
2	none	123.3	61.	0	.32	12
		123.3	61.	110.5		
3	none	82.2	341.	0	.32	12
		82.2	341.	109.		
4	none	91.3	251.	0	.32	12
		91.3	251.	109.3		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	9.08333	2	9.20833
radius	1	.3	2	.32

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.37	0	1	.0252315	.0255787

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	-7,744.8	0	0	0
2	13	0	-7,744.8	0	0	0
3	25	0	-7,744.8	0	0	0

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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 37, sector 1							
1.37	84.412	124.54	150.45	55.9	5.7823	-3.0348	-2.986

DAY/ NIGHT DIRECTIONAL

KZSF

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.3	12
		0	0	110.		
2	none	123.3	61.	0	.32	12
		123.3	61.	110.5		
3	none	82.2	341.	0	.32	12
		82.2	341.	109.		
4	none	91.3	251.	0	.32	12
		91.3	251.	109.3		

Number of wires = 4
current nodes = 48

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	9.08333	2	9.20833
radius	1	.3	2	.32

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.37	0	1	.0252315	.0255787

Sources

source	node	sector	magnitude	phase	type
1	1	1	595.624	57.4	voltage
2	13	1	411.653	126.7	voltage
3	25	1	537.066	328.7	voltage
4	37	1	1,268.53	317.1	voltage

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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 1, sector 1							
1.37	57.342	69.132	89.819	50.3	3.3908	-5.28	-1.5273
source = 2; node 13, sector 1							
1.37	50.928	125.13	135.09	67.9	8.0243	-2.1762	-4.0436
source = 3; node 25, sector 1							
1.37	226.7	46.266	231.37	11.5	4.7321	-3.7272	-2.3951
source = 4; node 37, sector 1							
1.37	166.36	136.41	215.13	39.4	5.689	-3.0856	-2.9363

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CURRENT rms
Frequency = 1.37 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	4.68911	7.1	4.65325	.578803
2	0	0	9.16667	4.967	4.1	4.95421	.356159
3	0	0	18.3333	5.044	2.4	5.03957	.211321
4	0	0	27.5	4.99264	1.1	4.99177	.0933282
5	0	0	36.6667	4.82273	360.	4.82272	-2.59E-03
6	0	0	45.8333	4.54126	359.	4.5406	-.0776481
7	0	0	55.	4.1555	358.2	4.1534	-.131993
8	0	0	64.1667	3.67377	357.4	3.67004	-.16546
9	0	0	73.3333	3.10535	356.7	3.10025	-.177875
10	0	0	82.5	2.45969	356.1	2.45387	-.169112
11	0	0	91.6667	1.74425	355.4	1.73871	-.138968
12	0	0	100.833	.958581	354.8	.954665	-.0865556
END	0	0	110.	0	0	0	0
GND	59.777	-107.841	0	2.15467	58.9	1.11394	1.84438
14	59.777	-107.841	9.20833	2.4048	56.3	1.33495	2.00024
15	59.777	-107.841	18.4167	2.51117	54.9	1.44377	2.05463
16	59.777	-107.841	27.625	2.53802	53.9	1.49641	2.04995
17	59.777	-107.841	36.8333	2.49304	53.	1.49917	1.99192
18	59.777	-107.841	46.0417	2.38073	52.3	1.45516	1.88425
19	59.777	-107.841	55.25	2.20513	51.7	1.36681	1.73045
20	59.777	-107.841	64.4583	1.97067	51.1	1.23665	1.53436
21	59.777	-107.841	73.6667	1.68223	50.6	1.06747	1.30016
22	59.777	-107.841	82.875	1.34478	50.1	.862133	1.03207
23	59.777	-107.841	92.0833	.962196	49.7	.622822	.733426
24	59.777	-107.841	101.292	.533905	49.2	.348807	.404214
END	59.777	-107.841	110.5	0	0	0	0
GND	77.7216	26.7617	0	1.64135	317.1	1.20292	-1.11669
26	77.7216	26.7617	9.08333	1.74018	305.1	.999807	-1.42429
27	77.7216	26.7617	18.1667	1.79943	298.4	.856201	-1.58268
28	77.7216	26.7617	27.25	1.82051	293.5	.725739	-1.6696
29	77.7216	26.7617	36.3333	1.79849	289.6	.604632	-1.6938
30	77.7216	26.7617	45.4167	1.73104	286.5	.492347	-1.65955
31	77.7216	26.7617	54.5	1.61761	283.9	.389389	-1.57005
32	77.7216	26.7617	63.5833	1.45905	281.7	.296527	-1.4286
33	77.7216	26.7617	72.6667	1.2572	279.8	.214497	-1.23877
34	77.7216	26.7617	81.75	1.01445	278.2	.143872	-1.0042
35	77.7216	26.7617	90.8333	.732651	276.7	.0849858	-.727705
36	77.7216	26.7617	99.9167	.41045	275.3	.0378534	-.408701
END	77.7216	26.7617	109.	0	0	0	0
GND	-29.7244	86.3258	0	4.16944	277.7	.559933	-4.13167
38	-29.7244	86.3258	9.10833	4.73982	269.5	-.0433436	-4.73963
39	-29.7244	86.3258	18.2167	5.03042	265.3	-.410595	-5.01364
40	-29.7244	86.3258	27.325	5.15802	262.3	-.686796	-5.11209
41	-29.7244	86.3258	36.4333	5.13129	260.1	-.885991	-5.05422
42	-29.7244	86.3258	45.5417	4.95538	258.2	-1.01297	-4.85074
43	-29.7244	86.3258	54.65	4.63599	256.7	-1.06996	-4.51083
44	-29.7244	86.3258	63.7583	4.18053	255.3	-1.05882	-4.04423
45	-29.7244	86.3258	72.8667	3.59804	254.2	-.981719	-3.46152
46	-29.7244	86.3258	81.975	2.89815	253.1	-.841125	-2.77341
47	-29.7244	86.3258	91.0833	2.08845	252.2	-.638985	-1.98829
48	-29.7244	86.3258	100.192	1.16697	251.3	-.374145	-1.10536
END	-29.7244	86.3258	109.3	0	0	0	0

Exhibit 4F - KZSF- DA Medium Wave Array Synthesis From Field Ratios

Frequency = 1.37 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.519	53.
3	.3692	-70.
4	1.0549	-99.8

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	421.17	57.4	4.6891	7.1
13	291.082	126.7	2.15467	58.9
25	379.763	328.7	1.64135	317.1
37	896.988	317.1	4.16943	277.7

Sum of square of source currents = 93.4169
Total power = 5,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00302772	-.00329958
Y(1, 2)	.00205258	.000469636
Y(1, 3)	.00212037	.0020552
Y(1, 4)	.00206811	.00132657
Y(2, 1)	.00205257	.000469636
Y(2, 2)	.00423342	-.00425787
Y(2, 3)	.00183465	.000151668
Y(2, 4)	.000254092	-.000382143
Y(3, 1)	.00212035	.00205524
Y(3, 2)	.00183465	.000151698
Y(3, 3)	.00379834	-.00389264
Y(3, 4)	.00164596	.00042856
Y(4, 1)	.0020681	.0013266
Y(4, 2)	.000254089	-.000382138
Y(4, 3)	.00164596	.000428553
Y(4, 4)	.00379424	-.00424529

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	79.4405	131.05
Z(1, 2)	5.55771	-46.1193
Z(1, 3)	40.2237	-37.4782
Z(1, 4)	35.046	-44.6304
Z(2, 1)	5.55795	-46.1196
Z(2, 2)	95.949	134.634
Z(2, 3)	-4.67245	-45.72
Z(2, 4)	-40.737	-1.37609
Z(3, 1)	40.2229	-37.4786
Z(3, 2)	-4.67302	-45.7198
Z(3, 3)	82.6563	127.414
Z(3, 4)	4.74849	-50.3399
Z(4, 1)	35.0453	-44.6306
Z(4, 2)	-40.7368	-1.3758
Z(4, 3)	4.7486	-50.3399
Z(4, 4)	84.8697	124.323

Exhibit 4G - Tower Base Circuit Analysis Model

CIRCUIT ANALYSIS

Circuit analysis was performed on each tower of the KZSF model. The "Phasetek" Nodal Circuit Analysis program was used to compute base model Input/ Output voltages and currents. For directional operation, 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. "Z_1" represents the ATU/filter Shunt impedance, "Z_2" represents the Tower Feed and series filter impedance, and "Z_3" represents the Tower Base Shunt impedance.

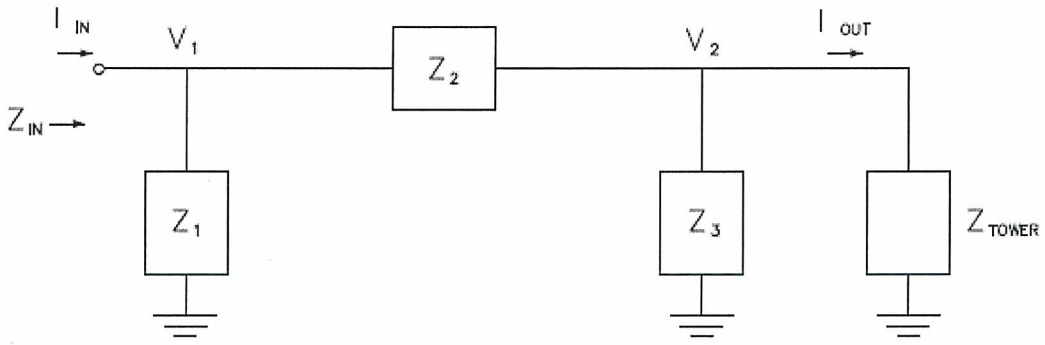

Exhibit 4H - Base Network Computation

TOWER ANALYSIS- DAY

CUSTOMER : KZSF
NETWORK ID : TOWER 1DA (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, -1000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -222.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 57.34, 69.13 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	-1000.00
2		GROUND	58.38	69.32
1		2	0.00	-222.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	759.67	-61.57
2	421.17	57.40

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	43.82	-134.68	141.63	-71.98
INPUT CURRENT (AMPS) :	5.28	0.97	5.36	10.40
OUTPUT CURRENT (AMPS) :	4.65	0.58	4.69	7.07

INPUT/OUTPUT CURRENT RATIO = 1.1439
INPUT/OUTPUT PHASE = 3.33 DEGREES

CUSTOMER : KZSF
NETWORK ID : TOWER 2DA (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, -1500.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -238.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 50.93, 125.13 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	-1500.00
2	GROUND	52.61	126.83
1	2	0.00	-238.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	260.72	-5.44
2	291.08	126.70

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	45.55	-104.98	114.44	-66.54
INPUT CURRENT (AMPS) :	1.10	1.99	2.28	61.10
OUTPUT CURRENT (AMPS) :	1.11	1.84	2.15	58.85

INPUT/OUTPUT CURRENT RATIO = 1.0573
INPUT/OUTPUT PHASE = 2.25 DEGREES

CUSTOMER : KZSF
NETWORK ID : TOWER 3DA (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00,-15000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -215.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 226.70, 46.27 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	-15000.00
2		GROUND	229.23	39.79
1		2	0.00	-215.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	470.94	-78.54
2	379.76	328.70

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	223.92	-176.57	285.16	-38.26
INPUT CURRENT (AMPS) :	1.26	-1.07	1.65	-40.28
OUTPUT CURRENT (AMPS) :	1.20	-1.12	1.64	-42.83

INPUT/OUTPUT CURRENT RATIO = 1.0062
INPUT/OUTPUT PHASE = 2.55 DEGREES

CUSTOMER : KZSF
NETWORK ID : TOWER 4DA (AT TCT)

FREQUENCY : 1370.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, -2200.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, -226.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7744.80 OHMS
TOWER IMPEDANCE (R,X) : 166.36, 136.41 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	-2200.00
2	GROUND	172.30	135.09
1	2	0.00	-226.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	798.13	-108.82
2	896.99	317.10

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	158.00	-99.19	186.55	-32.12
INPUT CURRENT (AMPS) :	0.98	-4.16	4.28	-76.70
OUTPUT CURRENT (AMPS) :	0.56	-4.13	4.17	-82.25

INPUT/OUTPUT CURRENT RATIO = 1.0261
INPUT/OUTPUT PHASE = 5.55 DEGREES

EXHIBIT 6 – Spurious Radiation Measurements

KLOK (1170 KHZ), 50.0 KW DAY (DA) MODE
KZSF (1370 KHZ), 5.0 KW DAY (DA) MODE
KSJX (1500 KHZ), 10.0 KW DAY (DA) MODE

Frequency (kHz)	Field Intensity (mV/M)	Attenuation (dB) relative to KLOK	KZSF	KSJX
1170	2270	--	--	--
1370	935	--	--	--
1500	871	--	--	--
510	.016	103.0	95.3	94.7
600	.012	105.5	97.8	97.2
660	.028	98.2	90.5	89.9
770	<.01	>107.1	>99.4	>98.8
840	.065	90.9	83.2	82.5
970	.076	89.5	81.8	81.2
990	<.01	>107.1	>99.4	>98.8
1110	.029	97.9	90.2	89.6
1240	.049	93.3	85.6	85.0
1570	.057	92.0	84.3	83.7
1630	.036	96.0	88.3	87.7
1760	.011	106.3	98.6	98.0
1770	.011	106.3	98.6	98.0
1830	.050	93.1	85.4	84.8
2010	.014	104.2	96.5	95.9
2140	.012	105.5	97.8	97.2
2160	.010	107.1	99.4	98.8
2340	.044	94.3	86.5	85.9
2540	.039	95.3	87.6	87.0
2610	<.01	>107.1	>99.4	>98.8
2670	.079	89.2	81.5	80.8
2740	.016	103.0	95.3	94.7
2870	.040	95.1	87.4	86.8
2940	<.01	>107.1	>99.4	>98.8
3000	.075	89.6	81.9	81.3
3130	<.01	>107.1	>99.4	>98.8
3330	<.01	>107.1	>99.4	>98.8

SPURIOUS RADIATION MEASUREMENTS (CONTINUED)

KLOK (1170 KHZ), 50.0 KW DAY (DA) MODE
KZSF (1370 KHZ), 5.0 KW DAY (DA) MODE
KSJX (1500 KHZ), 10.0 KW DAY (DA) MODE

Frequency (kHz)	Field Intensity (mV/M)	Attenuation (dB) relative to KLOK	KZSF	KSJX
3510	.052	92.8	85.1	84.5
3710	.077	89.4	81.7	81.1
3840	.070	90.2	82.5	81.9
3910	.048	93.5	85.8	85.2
4110	.029	97.9	90.2	89.6
4170	.025	99.2	91.5	90.8
4240	.011	106.3	98.6	98.0
4370	.018	102.0	94.3	93.7
4500	.057	92.0	84.3	83.7
4880	.012	105.5	97.8	97.2

Above taken with Potomac Instruments, PI 4100, 1.17 kM from the Antenna on a bearing of 235°T. Point coordinates
(NAD 27): N37° 21' 6.0", W121° 52' 56.0".

Above readings meet required attenuation of 80.0dB.

EXHIBIT 7 - Reference Field Strength Measurements- KZSF

Reference field strength measurements were made using a Potomac Instruments FIM-41 which was compared in calibration to a Potomac Instruments PI4100 Serial Number 249, calibrated 1/21/2016 at three locations along radials at the azimuths as determined by pattern minima and lobes coinciding with the previous MoM proof on 2013.

The measured field strengths, descriptions, and GPS coordinates for the reference measurement points are shown on the following pages. All locations indicated are listed using NAD 83 datum. All measurements were taken on March 10th and 13th, 2017 between the hours of 9:00am and 3:30pm.

KZSF DA REFERENCE POINTS

48.5° Radial

Point No	Dist. Km.	N Latitude	W. Longitude	Field mV/m	Comments
1	1.06	37° 21' 50.4"	121° 51' 48.5"	125	Near Life Storage sign on Las Plumas
2	1.24	37° 21' 54.2"	121° 51' 42.7"	175	SE Corner pkg lot Freeland Foods
3		37° 22' 00.5"	121° 51' 33.8"	115	1985 Las Plumas

112° Radial

Point No	Dist. Km.	N. Latitude	W. Longitude	Field mV/m	Comments
1	0.93	37° 21' 16.3"	121° 51' 45.9"	270	NW Corner E St James & N 33rd st
2	1.16	37° 21' 13.5"	121° 51' 37.0"	240	Eastwood Ct
3	1.39	37° 22' 10.4"	121° 51' 28.8"	130	#45 34th St.

143.5° Radial

Point No	Dist. Km.	N. Latitude	W. Longitude	Field mV/m	Comments
1	0.26	37° 21' 20.9"	121° 52' 14.4"	150	SE Corner Eggo Pkg lot (pt toward array)
2	0.873	37° 21' 05.5"	121° 51' 59.8"	85	NE Corner SJ City parking lot
3	1.09	37° 20' 59.3"	121° 51' 54.6"	83	Five Wounds & N 28th St

281.5° Radial

Point No	Dist. Km.	N. Latitude	W. Longitude	Field mV/m	Comments
1	0.861	37° 21' 33.1"	121° 52' 55.2"	1050	743 N 20th St
2	1.06	37° 21' 34.9"	121° 53' 03.6"	1000	E Mission just West of 19th St.
3	1.27	37° 21' 36.1"	121° 53' 11.3"	480	Vestal & N 17th St

EXHIBIT 8 – Site Survey

Because this is an existing site in use by KSJX and KZSF, a survey is not necessary, however, a survey for KLOK as a new tenant at this site was conducted and verified that the towers are placed as specified in this analysis.