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November 12, 2009

VIA HAND DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Attention: **Mr. Son K. Nguyen**
Audio Division, Media Bureau

Re: **Amendment to Pending Application for Station License**
KFLC(AM), Fac. ID 34298
BMML-20090710AUV

Dear Ms. Dortch:

KESS-AM License Corp., licensee of AM radio station KFLC, Fort Worth, TX, hereby submits for filing an original and two copies of an amendment to the engineering portion of the pending FCC Form 302-AM application.

Please direct any questions regarding the amendment to the undersigned.

Sincerely,

WH Fitz

William H. Fitz
Counsel for KESS-AM License Corp.

DC: 3343980-1

AMENDMENT TO A PENDING APPLICATION

FCC FORM 302-AM, SECTION III

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

RADIO STATION KFLC
(Facility ID # 34298)

KESS-AM LICENSE CORP.

1270 kHz, 5.0/50.0 kW, DA-2

FORT WORTH, TEXAS

NOVEMBER, 2009

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WILLOUGHBY & VOSS
BROADCAST TECHNICAL CONSULTANTS
P.O. BOX 701190
SAN ANTONIO, TEXAS 78270-1190
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AMENDED
KESS-AM LICENSE CORP.
KFLC RADIO
1270 kHz, 5.0/50.0 kW, DA-2
FORT WORTH, TEXAS
NOVEMBER, 2009

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

FCC Form 302, Section III

Technical Summary Statement

Exhibits:

1. Verification of Method od Moments Model
2. DA-Day Operating Parameter Determination
3. DA-Night Operating Parameter Determination
4. Details of Model for Towers Individually Driven
5. Detail of Model for DA-DAY
6. Detail of Model for DA-NIGHT
7. Sample System Measurements
8. Reference Field Strength Measurements
9. Direct Measurement of Power
10. Antenna Monitor and Sample System
11. Radio Frequency Radiation Considerations
12. Summary of As Built Certified Array Geometry

Appendix A Land Surveyor's Certified Documents

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Amended

Name of Applicant

KESS-AM License Corp

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

X Station License

W 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
KFLC		1270	Unlimited	5.0	50.0

2. Station location

State	City or Town
Texas	Fort Worth

3. Transmitter location

State	County	City or Town	Street address (or other identification)
Texas	Tarrant	Arlington	5671 W. Pioneer Parkway

4. Main studio location

State	County	City or Town	Street address (or other identification)
Texas	Dallas	Dallas	7700 Carpenter Fwy

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

State	County	City or Town	Street address (or other identification)
Texas	Dallas	Dallas	7700 Carpenter Fwy

6. Has type-approved stereo generating equipment been installed? W Yes X No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? X Yes W No

W Not Applicable

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

Exhibit No.

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
10.4	32.4

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50.0	50.0	0.0	0.0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	-161.4		0.532			
2	0.0	-63.6	1.000	0.335		
3	-173.5	0.0	0.731	1.000		
4	+ 18.8		0.353			
5	-160.1		0.520			
6	+ 46.4	-14.2	0.256	0.557		

Manufacturer and type of antenna monitor: Potomac Instruments 1901

Tower 7 Day -56.4 0.754

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

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
uniform cross-section, guyed, steel towers, base insulated	59.07	60.0	60.0	Exhibit No.

Excitation X Series W 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		
32°	43'	36"	97°	11'	30"

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.

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

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

None

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

Does Not Apply

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)
Lyndon H. Willoughby	
Address (include ZIP Code)	Date
Willoughby & Voss, LLC P.O. Box 701190 San Antonio, TX 78270-1190	November 2, 2009 (Amended)
	Telephone No. (Include Area Code)
	210-862-5285 (cell)

W Technical Director

W Chief Operator

W Other (specify)

W Registered Professional Engineer

X Technical Consultant

KFLC - Technical Summary Statement

These technical exhibits support an application for Station License for radio station KFLC, Fort Worth, Texas. KFLC operates on 1270 kHz, and is currently licensed by the FCC.

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

It should be noted that some portions of the narrative information contained herein has been offered in previous filings of a similar nature. The method of moments modeling and its procedures are precise and therefore do not lend themselves to creative writing. These statements are used with the expressed consent of the author (Ronald D. Rackley, PE).

The instant amendment includes a corrected FCC Form 302, Section III, corrected Exhibits 2 and 3 and additional analysis of the as-built deviation (Exhibit 12).

Lyndon H. Willoughby
Willoughby & Voss, LLC.
November 2, 2009

KFLC - Verification of Method of Moments Model - Exhibit 1

The base impedance of each tower was measured with a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler, in a calibrated measurement system.

The measurement point and the open circuit point ("Reference Point"), was at the normal mounting location of the toroidal transformer (removed for calibration measurements). The RF current travels on copper tubing through the ATU bowl insulator and is connected to the tower. There are no shunt components between the "Reference Point" and the tower base, except, for very high impedance (approximately 100 kohm) static drain coils. Due to the high impedance of the static drains, they were not considered in the process of calibrating the method of moments model ("model") to converge with the measured self impedances.

The following pages show the calculation of circuits which were performed to relate the model impedances of the tower feedpoints to the Reference Point measured impedances. Westberg Circuit Analysis Program ("WCAP"), was used to calculate values for the assumed circuit.

In each of the WCAP tabulations, node 2 represents the ATU Reference Point and node 3 represents the feedpoint of the tower. Ground potential is represented by node 0. The calculated Reference Point impedance is shown below "TO IMPEDANCE" on line R 1>2 following the phantom 1.0 ohm resistors that were included in series with the drive current sources (I 0 1), to provide calculation points for the impedances. The tower feedpoint impedances from the method of moments model are represented by complex loads from node 3 to ground (R 3>0). The assumed stray capacitance of 0.00001875 uF for Towers 1 through 5 & 7 and 0.000084 uF for Tower 6 (an iso-coupler for STL), appear as "0.0000 uF" on the WCAP printout due to rounding.

The modeled and measured self-impedance at the ATU Reference Point, with all other towers open circuited at their Reference Point, agree within the +/-2 ohms and +/- 4% (resistance and reactance), as required by the FCC Rules.

WCAP - KFLC Twr 1 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	116.5363 ∡	58.1418° V
Node:	2	116.0116 ∡	58.5613° V
Node:	3	93.5699 ∡	49.7081° V

WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	3.460	27.61 ∡ 90.000° V	1.00 ∡ -0.001° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.000	93.57 ∡ 49.708° V	0.01 ∡ 139.708° A
R	3→0	59.234	93.57 ∡ 49.708° V	1.01 ∡ -0.513° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	3.460	60.51 + j 98.981	60.51 + j 71.371
R	1→2	1.000	61.51 + j 98.981	60.51 + j 98.981
C	3→0	0.000	0.00 - j 6687.239	0.00 + j 0.000
R	3→0	59.234	59.23 + j 71.148	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	3.4600	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0000	3	0	
R	59.2340	3	0	71.1480

WCAP - KFLC Twr 2 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	118.1280 ∡	62.6901° V
Node:	2	117.6726 ∡	63.1227° V
Node:	3	90.3615 ∡	53.9338° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.000	31.92 ∡ 90.000° V	1.00 ∡ 0.000° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.000	90.36 ∡ 53.934° V	0.01 ∡ 143.934° A
R	3→0	52.051	90.36 ∡ 53.934° V	1.01 ∡ -0.451° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.000	53.20 + j 104.961	53.20 + j 73.043
R	1→2	1.000	54.20 + j 104.961	53.20 + j 104.961
C	3→0	0.000	0.00 - j 6687.239	0.00 + j 0.000
R	3→0	52.051	52.05 + j 72.663	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.0000	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0000	3	0	
R	52.0510	3	0	72.6630

WCAP - KFLC Twr 3 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	113.6452 ∡	61.2427° V
Node:	2	113.1675 ∡	61.6866° V
Node:	3	84.2948 ∡	50.4501° V

WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.340	34.63 ∡ 90.000° V	1.00 ∡ 0.000° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.000	84.29 ∡ 50.450° V	0.01 ∡ 140.450° A
R	3→0	52.643	84.29 ∡ 50.450° V	1.01 ∡ -0.455° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.340	53.67 + j 99.629	53.67 + j 64.997
R	1→2	1.000	54.67 + j 99.629	53.67 + j 99.629
C	3→0	0.000	0.00 - j 6687.239	0.00 + j 0.000
R	3→0	52.643	52.64 + j 64.790	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.3400	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0000	3	0	
R	52.6430	3	0	64.7900

WCAP - KFLC Twr 4 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	115.3629 ∡	59.5620° V
Node:	2	114.8595 ∡	59.9920° V
Node:	3	85.8456 ∡	47.9985° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.470	35.67 ∡ 90.000° V	1.00 ∡ 0.001° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.000	85.85 ∡ 47.999° V	0.01 ∡ 137.999° A
R	3→0	56.359	85.85 ∡ 47.999° V	1.01 ∡ -0.488° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.470	57.44 + j 99.463	57.44 + j 63.794
R	1→2	1.000	58.44 + j 99.463	57.44 + j 99.463
C	3→0	0.000	0.00 - j 6687.239	0.00 + j 0.000
R	3→0	56.359	56.36 + j 63.671	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.4700	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0000	3	0	
R	56.3590	3	0	63.6710

WCAP - KFLC Twr 5 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	111.7103 ∡	61.7470° V
Node:	2	111.2404 ∡	62.2007° V
Node:	3	82.0224 ∡	50.7645° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.370	34.87 ∡ 90.000° V	1.00 ∡ -0.000° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.000	82.02 ∡ 50.765° V	0.01 ∡ 140.765° A
R	3→0	50.905	82.02 ∡ 50.765° V	1.01 ∡ -0.440° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.370	51.88 + j 98.402	51.88 + j 63.531
R	1→2	1.000	52.88 + j 98.402	51.88 + j 98.402
C	3→0	0.000	0.00 - j 6687.239	0.00 + j 0.000
R	3→0	50.905	50.90 + j 63.324	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.3700	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0000	3	0	
R	50.9050	3	0	63.3240

WCAP - KFLC Twr 6 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	127.7355 ∡	62.0364° V
Node:	2	127.2696 ∡	62.4340° V
Node:	3	87.5546 ∡	47.7255° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	6.020	48.04 ∡ 90.000° V	1.00 ∡ 0.000° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.001	87.55 ∡ 47.726° V	0.06 ∡ 137.726° A
R	3→0	54.019	87.55 ∡ 47.726° V	1.04 ∡ -2.167° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	6.020	58.90 + j 112.822	58.90 + j 64.784
R	1→2	1.000	59.90 + j 112.822	58.90 + j 112.822
C	3→0	0.001	-0.01 - j 1491.891	0.00 + j 0.000
R	3→0	54.019	54.02 + j 64.132	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	6.0200	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0001	3	0	
R	54.0190	3	0	64.1320

WCAP - KFLC Twr 7 OC self

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	115.5165 ∡	59.5387° V
Node:	2	115.0127 ∡	59.9681° V
Node:	3	83.6612 ∡	46.5253° V

WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.870	38.86 ∡ 90.000° V	1.00 ∡ -0.001° A
R	1→2	1.000	1.00 ∡ 0.000° V	1.00 ∡ 0.000° A
C	3→0	0.000	83.66 ∡ 46.525° V	0.01 ∡ 136.525° A
R	3→0	56.526	83.66 ∡ 46.525° V	1.01 ∡ -0.489° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.870	57.56 + j 99.572	57.56 + j 60.711
R	1→2	1.000	58.56 + j 99.572	57.56 + j 99.572
C	3→0	0.000	-0.00 - j 6683.672	0.00 + j 0.000
R	3→0	56.526	56.53 + j 60.647	0.00 + j 0.000

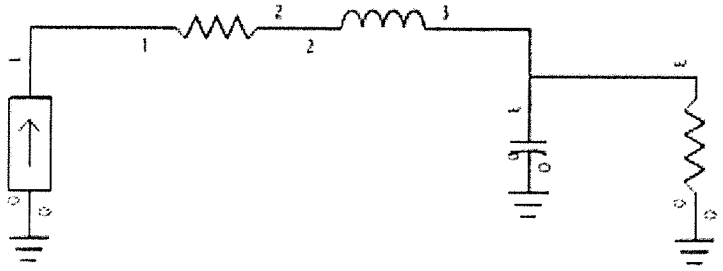
WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.8700	2	3	0.0000
R	1.0000	1	2	0.0000
I	1.0000	0	1	0.0000
C	0.0000	3	0	
R	56.5260	3	0	60.6470

VERIFICATION OF METHOD OF MOMENTS MODEL

KFLC, 1270 kHz, 5.0/50.0 kW, DA-2
Fort Worth, Texas



TWR	L(uH)	XL	Xoc	Z modeled	Z ATU (model)	Z ATU (msrd)
1	3.46	+j 27.6	-j 6685	59.23 +j 71.14	60.51 +j 98.98	60.3 +j 99.0
2	4.00	+j 31.9	-j 6685	52.05 +j 72.66	53.20 +j104.96	53.3 +j105.2
3	4.34	+j 34.6	-j 6685	52.64 +j 64.79	53.67 +j 99.63	53.8 +j 99.8
4	4.47	+j 35.7	-j 6685	56.36 +j 63.67	57.44 +j 99.46	57.4 +j 99.4
5	4.37	+j 34.9	-j 6685	50.91 +j 63.32	51.88 +j 98.40	51.6 +j 98.4
6	6.02	+j 48.0	-j 1495	54.02 +j 64.13	58.90 +j112.82	58.8 +j112.8
7	4.87	+j 38.9	-j 6685	56.52 +j 60.65	57.56 +j 99.57	57.6 +j 99.6

KFLC - DA-DAY Operating Parameter Determination - Exhibit 2

After converging the model with the measured open-circuit self impedance for each tower in the array, the model was used to make the directional antenna calculations.

The model calculated the voltage values for the source point of each tower in the array, as well as the tower currents. The summation of current moments, when normalized, equate to the theoretical field parameters which produce the directional pattern.

The ATU output currents were calculated using WCAP nodal analysis. WCAP input data consists of:

- Tower currents calculated using the method of moments model for the directional antenna.
- Tower operating impedances calculated by the method of moments for the directional antenna. In WCAP these are treated as a complex load from node 3 to ground.
- The circuit values which were derived from analysis of the measured open-circuit self impedances.

The WCAP nomenclature, in the following tabulations are defined as:

- Node 2 is the ATU Reference Point (where the TCT sampler is located).
- Node 3 is the tower feedpoint.
- Node 0 is ground potential.
- Node 1>2 is a phantom 1.0 ohm resistor.
- Node 2>3 is the assumed series reactance.
- Node 3>0 is both the assumed shunt capacitance of base insulator & strays, as well as a resistor that represents the complex load presented by the tower.
- "TO IMPEDANCE" is the impedance from one node to the following node.

All currents and voltages were up-scaled by a factor of 1,000 to preserve more significant digits in the tabulations. Since the TCT samplers and the sampling lines are identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled ATU currents.

KFLC - DA-DAY Operating Parameter Determination - Exhibit 2
KFLC, 1270 kHz, 5.0/50.0 kW, DA-2
Fort Worth, Texas

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
2	11	7.16	+299.80	0.335	-63.6
3	21	21.40	+003.42	1.000	000.0
6	51	11.91	+349.20	0.557	-14.2
7	61	16.14	+307.00	0.754	-56.4

WCAP - KFLC DAD T2 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	1888368.2524 ∡	-45.6503° V
Node:	2	1881440.7657 ∡	-45.5955° V
Node:	3	1837184.6159 ∡	-52.5073° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.000 228470.01 ∡ 29.800° V	7157.90 ∡ -60.200° A
R	1→2	1.000 7157.90 ∡ -60.200° V	7157.90 ∡ -60.200° A
C	3→0	0.0001837184.62 ∡ -52.507° V	274.88 ∡ 37.493° A
R	3→0	251.4001837184.62 ∡ -52.507° V	7199.85 ∡ -62.368° A

	WCAP PART	FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.000 254.36 + j 66.276	254.36 + j 34.357
R	1→2	1.000 255.36 + j 66.276	254.36 + j 66.276
C	3→0	0.000 0.00 - j 6683.672	0.00 + j 0.000
R	3→0	251.400 251.40 + j 43.700	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.0000	2	3	0.0000
R	1.0000	1	2	0.0000
I	7157.9000	0	1	299.8000
C	0.0000	3	0	
R	251.4000	3	0	43.7000

WCAP - KFLC DAD T3 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	1381996.7871 ∡	69.0177° V
Node:	2	1373295.4720 ∡	69.8307° V
Node:	3	754909.0747 ∡	46.7023° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.340 740979.01 ∡ 93.420° V	21396.00 ∡ 3.420° A
R	1→2	1.000 21396.00 ∡ 3.420° V	21396.00 ∡ 3.420° A
C	3→0	0.000 754909.07 ∡ 46.702° V	112.95 ∡ 136.702° A
R	3→0	25.500 754909.07 ∡ 46.702° V	21473.59 ∡ 3.201° A

	WCAP PART	FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.340 25.69 + j 58.821	25.69 + j 24.190
R	1→2	1.000 26.69 + j 58.821	25.69 + j 58.821
C	3→0	0.000 0.00 - j 6683.672	0.00 + j 0.000
R	3→0	25.500 25.50 + j 24.200	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.3400	2	3	0.0000
R	1.0000	1	2	0.0000
I	21396.0000	0	1	3.4200
C	0.0000	3	0	
R	25.5000	3	0	24.2000

WCAP - KFLC DAD T6 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	722399.5846 ∡	47.7389°	V
Node:	2	716257.1062 ∡	48.5514°	V
Node:	3	367795.3646 ∡	-3.8945°	V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE				BRANCH CURRENT			
L	2→3	6.020	571982.10 ∡	79.200°	V	11907.00 ∡	-10.800°	A
R	1→2	1.000	11907.00 ∡	-10.800°	V	11907.00 ∡	-10.800°	A
C	3→0	0.001	367795.36 ∡	-3.894°	V	246.53 ∡	86.106°	A
R	3→0	30.500	367795.36 ∡	-3.894°	V	11939.15 ∡	-11.975°	A

	WCAP PART		FROM IMPEDANCE			TO IMPEDANCE		
L	2→3	6.020	30.66 + j	51.751		30.66 + j	3.714	
R	1→2	1.000	31.66 + j	51.751		30.66 + j	51.751	
C	3→0	0.001	0.00 - j	1491.891		0.00 + j	0.000	
R	3→0	30.500	30.50 + j	4.330		0.00 + j	0.000	

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	6.0200	2	3	0.0000
R	1.0000	1	2	0.0000
I	11907.0000	0	1	349.2000
C	0.0001	3	0	
R	30.5000	3	0	4.3300

WCAP - KFLC DAD T7 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	1531125.5151 ∡	-22.4574° V
Node:	2	1517355.6861 ∡	-22.1501° V
Node:	3	1311952.9178 ∡	-46.1804° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.870 622298.59 ∡ 37.000° V	16013.50 ∡ -53.000° A
R	1→2	1.000 16013.50 ∡ -53.000° V	16013.50 ∡ -53.000° A
C	3→0	0.0001311952.92 ∡ -46.180° V	196.29 ∡ 43.820° A
R	3→0	81.1001311952.92 ∡ -46.180° V	16037.99 ∡ -53.696° A

	WCAP PART	FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.870 81.35 + j 48.589	81.35 + j 9.728
R	1→2	1.000 82.35 + j 48.589	81.35 + j 48.589
C	3→0	0.000 0.00 - j 6683.672	0.00 + j 0.000
R	3→0	81.100 81.10 + j 10.700	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.8700	2	3	0.0000
R	1.0000	1	2	0.0000
I	16013.5000	0	1	307.0000
C	0.0000	3	0	
R	81.1000	3	0	10.7000

KFLC - DA-NIGHT Operating Parameter Determination - Exhibit 3

After converging the model with the measured open-circuit self impedance for each tower in the array, the model was used to make the directional antenna calculations.

The model calculated the voltage values for the source point of each tower in the array, as well as the tower currents. The summation of current moments, when normalized, equate to the theoretical field parameters which produce the directional pattern.

The ATU output currents were calculated using WCAP nodal analysis. WCAP input data consists of:

- Tower currents calculated using the method of moments model for the directional antenna.
- Tower operating impedances calculated by the method of moments for the directional antenna. In WCAP these are treated as a complex load from node 3 to ground.
- The circuit values which were derived from analysis of the measured open-circuit self impedances.

The WCAP nomenclature, in the following tabulations are defined as:

- Node 2 is the ATU Reference Point (where the TCT sampler is located.
- Node 3 is the tower feedpoint.
- Node 0 is ground potential.
- Node 1>2 is a phantom 1.0 ohm resistor.
- Node 2>3 is the assumed series reactance.
- Node 3>0 is both the assumed shunt capacitance of base insulator & strays, as well as a resistor that represents the complex load presented by the tower.
- "TO IMPEDANCE" is the impedance from one node to the following node.

All currents and voltages were up-scaled by a factor of 1,000 to preserve more significant digits in the tabulations. Since the TCT samplers and the sampling lines are identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled ATU currents.

KFLC - DA-NIGHT Operating Parameter Determination - Exhibit 3
KFLC, 1270 kHz, 5.0/50.0 kW, DA-2
Fort Worth, Texas

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
1	1	8.37	+357.4	0.532	-161.4
2	11	15.75	+159.0	1.000	000.0
3	21	11.52	+345.5	0.731	-173.5
4	31	5.56	+177.8	0.353	+018.8
5	41	8.18	+358.9	0.520	-160.1
6	51	4.03	+205.4	0.256	+046.4

WCAP - KFLC DAN T1 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	1097188.7803 ∡	96.6964° V
Node:	2	1098573.0565 ∡	97.1276° V
Node:	3	871500.4197 ∡	99.6975° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	3.460 231274.35 ∡ 87.400° V	8376.60 ∡ -2.600° A
R	1→2	1.000 8376.60 ∡ -2.600° V	8376.60 ∡ -2.600° A
C	3→0	0.000 871500.42 ∡ 99.697° V	130.39 ∡ -170.303° A
R	3→0	-21.500 871500.42 ∡ 99.697° V	8504.05 ∡ -2.413° A

	WCAP PART	FROM IMPEDANCE	TO IMPEDANCE
L	2→3	3.460 -22.16 + j 129.262	-22.16 + j 101.653
R	1→2	1.000 -21.16 + j 129.262	-22.16 + j 129.262
C	3→0	0.000 -0.00 - j 6683.672	0.00 + j 0.000
R	3→0	-21.500 -21.50 + j 100.200	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	3.4600	2	3	0.0000
R	1.0000	1	2	0.0000
I	8376.6000	0	1	357.4000
C	0.0000	3	0	
R	-21.5000	3	0	100.2000

WCAP - KFLC DAN T2 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	2088240.2727 ∡ -116.7857° V
Node:	2	2086710.9065 ∡ -116.3553° V
Node:	3	1586723.0162 ∡ -118.0504° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.000 502877.25 ∡ -111.000° V	15755.00 ∡ 159.000° A
R	1→2	1.000 15755.00 ∡ 159.000° V	15755.00 ∡ 159.000° A
C	3→0	0.0001586723.02 ∡ -118.050° V	237.40 ∡ -28.050° A
R	3→0	12.0001586723.02 ∡ -118.050° V	15990.63 ∡ 158.896° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.000	12.36 + j 131.869	12.36 + j 99.951
R	1→2	1.000	13.36 + j 131.869	12.36 + j 131.869
C	3→0	0.000	0.00 - j 6683.672	0.00 + j 0.000
R	3→0	12.000	12.00 + j 98.500	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.0000	2	3	0.0000
R	1.0000	1	2	0.0000
I	15755.0000	0	1	159.0000
C	0.0000	3	0	
R	12.0000	3	0	98.5000

WCAP - KFLC DAN T3 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	1449384.2325 ∡	66.6877° V
Node:	2	1447664.7251 ∡	67.1381° V
Node:	3	1054682.2134 ∡	63.9857° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.340 398818.21 ∡ 75.500° V	11516.00 ∡ -14.500° A
R	1→2	1.000 11516.00 ∡ -14.500° V	11516.00 ∡ -14.500° A
C	3→0	0.0001054682.21 ∡ 63.986° V	157.80 ∡ 153.986° A
R	3→0	17.8001054682.21 ∡ 63.986° V	11670.67 ∡ -14.655° A

	WCAP PART	FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.340 18.28 + j 124.373	18.28 + j 89.741
R	1→2	1.000 19.28 + j 124.373	18.28 + j 124.373
C	3→0	0.000 0.00 - j 6683.672	0.00 + j 0.000
R	3→0	17.800 17.80 + j 88.600	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.3400	2	3	0.0000
R	1.0000	1	2	0.0000
I	11516.0000	0	1	345.5000
C	0.0000	3	0	
R	17.8000	3	0	88.6000

WCAP - KFLC DAN T4 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	798946.9262 ∡	-77.4573° V
Node:	2	800381.2359 ∡	-77.0720° V
Node:	3	610956.8344 ∡	-72.2079° V

WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	4.470	198503.77 ∡ -92.200° V	5565.16 ∡ 177.800° A
R	1→2	1.000	5565.16 ∡ 177.800° V	5565.16 ∡ 177.800° A
C	3→0	0.000	610956.83 ∡ -72.208° V	91.41 ∡ 17.792° A
R	3→0	-36.400	610956.83 ∡ -72.208° V	5651.15 ∡ 178.117° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.470	-37.53 + j 138.836	-37.53 + j 103.167
R	1→2	1.000	-36.53 + j 138.836	-37.53 + j 138.836
C	3→0	0.000	-0.00 - j 6683.672	0.00 + j 0.000
R	3→0	-36.400	-36.40 + j 101.800	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.4700	2	3	0.0000
R	1.0000	1	2	0.0000
I	5565.1600	0	1	177.8000
C	0.0000	3	0	
R	-36.4000	3	0	101.8000

WCAP - KFLC DAN T5 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	1014058.2361 ∡	78.5612° V
Node:	2	1012621.8133 ∡	79.0166° V
Node:	3	733178.5746 ∡	75.1867° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	4.370 285314.93 ∡	88.900° V	8182.00 ∡	-1.100° A
R	1→2	1.000 8182.00 ∡	-1.100° V	8182.00 ∡	-1.100° A
C	3→0	0.000 733178.57 ∡	75.187° V	109.70 ∡	165.187° A
R	3→0	20.700 733178.57 ∡	75.187° V	8288.61 ∡	-1.280° A

	WCAP PART	FROM IMPEDANCE	TO IMPEDANCE
L	2→3	4.370 21.24 + j 121.925	21.24 + j 87.054
R	1→2	1.000 22.24 + j 121.925	21.24 + j 121.925
C	3→0	0.000 0.00 - j 6683.672	0.00 + j 0.000
R	3→0	20.700 20.70 + j 86.000	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	4.3700	2	3	0.0000
R	1.0000	1	2	0.0000
I	8182.0000	0	1	358.9000
C	0.0000	3	0	
R	20.7000	3	0	86.0000

WCAP - KFLC DAN T6 base analysis 103109

WCAP OUTPUT AT FREQUENCY: 1.270 mHz

NODE VOLTAGES

Node:	1	643693.8086 ∡	-83.0161° V
Node:	2	642431.7527 ∡	-82.6750° V
Node:	3	462270.9458 ∡	-90.1424° V

WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART	BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	6.020 193637.10 ∡ -64.600° V	4030.96 ∡ -154.600° A
R	1→2	1.000 4030.96 ∡ -154.600° V	4030.96 ∡ -154.600° A
C	3→0	0.001 462270.95 ∡ -90.142° V	309.86 ∡ -0.142° A
R	3→0	43.200 462270.95 ∡ -90.142° V	4312.60 ∡ -156.375° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	6.020	49.45 + j 151.509	49.45 + j 103.472
R	1→2	1.000	50.45 + j 151.509	49.45 + j 151.509
C	3→0	0.001	0.00 - j 1491.891	0.00 + j 0.000
R	3→0	43.200	43.20 + j 98.100	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.2700	0.0000	1	
L	6.0200	2	3	0.0000
R	1.0000	1	2	0.0000
I	4030.9600	0	1	205.4000
C	0.0001	3	0	
R	43.2000	3	0	98.1000

KFLC - Details of Model for Towers Individually Driven - Exhibit 4

Using Expert MININEC Broadcast Professional, Version 14.5, the KFLC seven tower array was modeled. Each tower was represented by one wire. The top and bottom wire end points were specified using electrical degrees for the frequency of 1270 kHz. Each tower wire was modeled based on 10 wire segments. The towers are physically 90.0 electrical degrees in height, the segment length is 9.0 electrical degrees.

The characteristics (height & radius) were adjusted until the modeled resistance approximately matched the measured resistance. Final adjustment to converge the model was made based on the introduction of a circuit model which consists of branches representing feedline inductances and stray capacitances. The base impedances were measured at the normal location of the current sampling TCTs (Reference Point) with the other towers opened circuited at their respective Reference Point. The method of moments model assumed loads at ground level having the reactances that were calculated for each case using the base circuit models for the open circuited towers of the array.

The modeled heights relative to the physical heights of the individual towers is within the specified range of 75% to 125%. The modeled radius is within the specified range of 80% to 150% of the cylindrical radius that represents the circumference equal to the sum of the tower face width. KFLC uses towers of identical, uniform cross-section, triangular towers having sides of 25.5 inches.

TOWER	Physical Height (deg)	Modeled Height (deg)	Modeled % of Height	Modeled Radius (m)	%Equivalent Radius
1	90	99.8	110.9	0.35	114.3
2	90	100.1	111.2	0.35	114.3
3	90	98.1	109.0	0.35	114.3
4	90	98.8	109.8	0.35	114.3
5	90	98.8	109.8	0.35	114.3
6	90	98.5	109.4	0.35	114.3
7	90	98.0	108.9	0.35	114.3

The following pages show the method of moments model details of the individually driven towers.

Tower 1 Self (all others OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.27	0	1	.0272222	.0278056

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	1	0	0	0	0	0
2	11	0	-6,685.	0	0	0
3	21	0	-6,685.	0	0	0
4	31	0	-6,685.	0	0	0
5	41	0	-6,685.	0	0	0
6	51	0	-1,495.	0	0	0
7	61	0	-6,685.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.27	59.234	71.143	92.574	50.2	3.4477	-5.1876	-1.5668

Tower 2 Self (all others OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency			segment length (wavelengths)	
no.	lowest	step	no. of steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

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	-6,685.	0	0	0
2	11	0	0	0	0	0
3	21	0	-6,685.	0	0	0
4	31	0	-6,685.	0	0	0
5	41	0	-6,685.	0	0	0
6	51	0	-1,495.	0	0	0
7	61	0	-6,685.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 11, sector 1							
1.27	52.051	72.663	89.382	54.4	3.7647	-4.7277	-1.7828

Tower 3 Self (all others OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

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	-6,685.	0	0	0
2	11	0	-6,685.	0	0	0
3	21	0	0	0	0	0
4	31	0	-6,685.	0	0	0
5	41	0	-6,685.	0	0	0
6	51	0	-1,495.	0	0	0
7	61	0	-6,685.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 21, sector 1							
1.27	52.643	64.79	83.481	50.9	3.2938	-5.4456	-1.4593

Tower 4 Self (all others OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

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	-6,685.	0	0	0
2	11	0	-6,685.	0	0	0
3	21	0	-6,685.	0	0	0
4	31	0	0	0	0	0
5	41	0	-6,685.	0	0	0
6	51	0	-1,495.	0	0	0
7	61	0	-6,685.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 31, sector 1							
1.27	56.359	63.671	85.031	48.5	3.1339	-5.7437	-1.3457

Tower 5 Self (all thers OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.27	0	1	.0272222	.0278056

Sources

source	node	sector	magnitude	phase	type
1	41	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-6,685.	0	0	0
2	11	0	-6,685.	0	0	0
3	21	0	-6,685.	0	0	0
4	31	0	-6,685.	0	0	0
5	41	0	0	0	0	0
6	51	0	-1,495.	0	0	0
7	61	0	-6,685.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 41, sector 1							
1.27	50.905	63.324	81.249	51.2	3.27	-5.4881	-1.4425

Tower 6 Self (all others OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

Sources

source	node	sector	magnitude	phase	type
1	51	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-6,685.	0	0	0
2	11	0	-6,685.	0	0	0
3	21	0	-6,685.	0	0	0
4	31	0	-6,685.	0	0	0
5	41	0	-6,685.	0	0	0
6	51	0	0	0	0	0
7	61	0	-6,685.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 51, sector 1							
1.27	54.019	64.132	83.851	49.9	3.218	-5.583	-1.4057

Tower 7 Self (all others OC)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

Sources

source	node	sector	magnitude	phase	type
1	61	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-6,685.	0	0	0
2	11	0	-6,685.	0	0	0
3	21	0	-6,685.	0	0	0
4	31	0	-6,685.	0	0	0
5	41	0	-6,685.	0	0	0
6	51	0	-1,495.	0	0	0
7	61	0	0	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 61, sector 1							
1.27	56.526	60.647	82.905	47.	2.981	-6.0622	-1.2356

KFLC - Details of Model for DA-DAY - Exhibit 5

Using Expert MININEC Broadcast Professional, Version 14.5, with the individual tower's characteristics that were verified by the individual tower impedance measurements, calculations were made to determine the complex voltage vlues for sources lacated at ground level under each tower of the array to produce current moment sums for the towers. When normalized these currents equated to the theoretical field parameters of the authorized directional pattern.

Towers 1,4 and 5 of the array, which are not used by the daytime pattern, were detuned by terminating each of these towers with load reactances of +j 430 ohms at node 1, + j447 ohms at node 31 and +j 445 ohms at node 41, in the tabulation. This value is the opposite sign reactance of the method of moments modeled operating impedance for the directional antenna with a field ratio of 0.00001 specified for Towers 1, 4 and 5.

TOWER	Wire	Base Node
1	1	1
2	2	11
3	3	21
4	4	31
5	5	41
6	6	51
7	7	61

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

KFLC Full Daytime Model

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.27 MHz

tower	field ratio magnitude	phase (deg)
1	1.E-05	0
2	.404	-90.
3	1.	0
4	1.E-05	0
5	1.E-05	0
6	.535	-16.
7	.734	-64.

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	1,233.91	242.1	2.87029	331.5
11	1,836.41	307.5	7.21463	297.8
21	754.112	46.7	21.462	3.2
31	378.286	256.2	.845518	345.1
41	723.688	293.3	1.62557	24.3
51	367.267	356.1	11.9364	348.
61	1,311.33	313.8	16.0321	306.3

Sum of square of source currents = 1,847.54

Total power = 50,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00586537	-.00561609
Y(1, 2)	.00197873	.0041678
Y(1, 3)	.000394606	.00067839
Y(1, 4)	-.000120135	.000115407
Y(1, 5)	5.5141E-05	.0002466
Y(1, 6)	.00212873	.00202526
Y(1, 7)	.00223291	.00087446
Y(2, 1)	.00197879	.00416777
Y(2, 2)	.00136175	-.00475855
Y(2, 3)	.00129406	.00453489
Y(2, 4)	.000162394	.000192333
Y(2, 5)	.000396361	.00207867
Y(2, 6)	.000927575	.00352465
Y(2, 7)	.00224556	.00334226
Y(3, 1)	.000394563	.000678383
Y(3, 2)	.00129391	.00453497
Y(3, 3)	.00461099	-.00508264
Y(3, 4)	.00230072	.00206305
Y(3, 5)	.00100408	.00381247
Y(3, 6)	.000307344	.00141313
Y(3, 7)	.00273737	.00178083
Y(4, 1)	-.000120129	.000115401
Y(4, 2)	.000162364	.000192344
Y(4, 3)	.00230076	.00206301
Y(4, 4)	.00616634	-.00641549
Y(4, 5)	.00250906	.003798
Y(4, 6)	.000450038	-1.5629E-05
Y(4, 7)	-3.8692E-05	-.000376468
Y(5, 1)	5.5143E-05	.000246595

Y(5, 2)	.000396303	.00207868
Y(5, 3)	.00100414	.00381246
Y(5, 4)	.00250906	.003798
Y(5, 5)	.00285478	-.00571132
Y(5, 6)	.00213259	.00385204
Y(5, 7)	.000125829	.000173735
Y(6, 1)	.00212869	.00202531
Y(6, 2)	.000927461	.0035247
Y(6, 3)	.000307354	.00141314
Y(6, 4)	.000450022	-1.562E-05
Y(6, 5)	.00213255	.00385205
Y(6, 6)	.00478357	-.00584334
Y(6, 7)	8.1352E-05	.000355994
Y(7, 1)	.00223289	.000874503
Y(7, 2)	.00224544	.00334236
Y(7, 3)	.00273739	.00178083
Y(7, 4)	-3.8704E-05	-.000376457
Y(7, 5)	.000125804	.000173732
Y(7, 6)	8.1358E-05	.000355983
Y(7, 7)	.00819575	-.00579679

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	59.6768	70.464
Z(1, 2)	26.6796	-25.3245
Z(1, 3)	-17.1858	-16.9074
Z(1, 4)	-15.2986	16.0508
Z(1, 5)	-19.6278	-14.9768
Z(1, 6)	9.88944	-31.1536
Z(1, 7)	-8.18626	-26.0172
Z(2, 1)	26.6797	-25.3243
Z(2, 2)	53.175	72.2165
Z(2, 3)	24.4577	-21.4586
Z(2, 4)	-19.5692	-14.9492
Z(2, 5)	6.49031	-28.5445
Z(2, 6)	19.1835	-27.1133
Z(2, 7)	11.0839	-28.9591
Z(3, 1)	-17.186	-16.9071
Z(3, 2)	24.4563	-21.4595
Z(3, 3)	52.7484	64.0945
Z(3, 4)	9.70362	-30.499
Z(3, 5)	18.7188	-26.6266
Z(3, 6)	-5.72104	-25.7926
Z(3, 7)	2.8508	-27.689
Z(4, 1)	-15.2985	16.0509
Z(4, 2)	-19.5693	-14.9489
Z(4, 3)	9.704	-30.4989
Z(4, 4)	56.2284	63.559
Z(4, 5)	25.6691	-26.3027
Z(4, 6)	-17.1904	-18.9756
Z(4, 7)	-15.93	9.82418
Z(5, 1)	-19.6279	-14.9766
Z(5, 2)	6.48965	-28.5445
Z(5, 3)	18.7192	-26.6264
Z(5, 4)	25.6691	-26.3027
Z(5, 5)	52.0296	63.283
Z(5, 6)	25.2243	-23.2757
Z(5, 7)	-20.7989	-.4206
Z(6, 1)	9.88872	-31.1537
Z(6, 2)	19.1825	-27.1137

Z(6, 3)	-5.72097	-25.7927
Z(6, 4)	-17.1904	-18.9755
Z(6, 5)	25.2242	-23.2758
Z(6, 6)	54.2817	63.9283
Z(6, 7)	-21.972	-2.69359
Z(7, 1)	-8.18683	-26.017
Z(7, 2)	11.0828	-28.9593
Z(7, 3)	2.85071	-27.6889
Z(7, 4)	-15.9299	9.82427
Z(7, 5)	-20.7989	-.420455
Z(7, 6)	-21.972	-2.69355
Z(7, 7)	56.566	60.7567

KFLC Full Daytime Model

KFLC Day

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

Sources

source	node	sector	magnitude	phase	type
1	11	1	2,597.07	307.5	voltage
2	21	1	1,066.48	46.7	voltage
3	51	1	519.394	356.1	voltage
4	61	1	1,854.5	313.8	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	430.	0	0	0
2	31	0	447.	0	0	0
3	41	0	445.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 11, sector 1							
1.27	251.4	43.729	255.17	9.9	5.1862	-3.3921	-2.6594

source = 2; node 21, sector 1

1.27	25.497	24.18	35.139	43.5	2.5351	-7.2452	-.90751

source = 3; node 51, sector 1

1.27	30.472	4.3326	30.779	8.1	1.6603	-12.104	-.27615

source = 4; node 61, sector 1

1.27	81.108	10.709	81.812	7.5	1.667	-12.038	-.28053

CURRENT rms
Frequency = 1.27 MHz
Input power = 50,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	2.86722	332.	2.53098	-1.34727
2	0	0	9.98	1.56584	332.	1.38296	-.734365
3	0	0	19.96	.750246	332.4	.665107	-.347133
4	0	0	29.94	.123478	337.9	.114426	-.0464054
5	0	0	39.92	.344808	148.5	-.294153	.179908
6	0	0	49.9	.660033	149.5	-.568895	.334666
7	0	0	59.88	.827359	149.6	-.713825	.418302
8	0	0	69.86	.849797	149.5	-.732462	.430878
9	0	0	79.84	.730083	149.4	-.628095	.37218
10	0	0	89.82	.467384	149.1	-.401072	.239976
END	0	0	99.8	0	0	0	0
GND	20.2456	87.6933	0	7.20098	297.6	3.33982	-6.37963
12	20.2456	87.6933	10.01	7.67276	283.6	1.80062	-7.45848
13	20.2456	87.6933	20.02	7.93499	276.1	.841103	-7.89029
14	20.2456	87.6933	30.03	7.95286	270.8	.108512	-7.95212
15	20.2456	87.6933	40.04	7.69275	266.8	-.431358	-7.68064
16	20.2456	87.6933	50.05	7.14279	263.6	-.790479	-7.09891
17	20.2456	87.6933	60.06	6.30481	261.1	-.975363	-6.22891
18	20.2456	87.6933	70.07	5.18881	259.	-.991948	-5.09311
19	20.2456	87.6933	80.08	3.80668	257.2	-.845737	-3.71155
20	20.2456	87.6933	90.09	2.15652	255.6	-.537939	-2.08835
END	20.2456	87.6933	100.1	0	0	0	0
GND	40.4912	175.387	0	21.4739	3.2	21.44	1.20568
22	40.4912	175.387	9.81	21.7613	1.7	21.7512	.664357
23	40.4912	175.387	19.62	21.3314	.9	21.3289	.323809
24	40.4912	175.387	29.43	20.3233	.2	20.3233	.0596254
25	40.4912	175.387	39.24	18.7756	359.6	18.7751	-.139338
26	40.4912	175.387	49.05	16.7292	359.1	16.7269	-.275954
27	40.4912	175.387	58.86	14.2299	358.6	14.2256	-.350795
28	40.4912	175.387	68.67	11.3269	358.2	11.321	-.363975
29	40.4912	175.387	78.48	8.06195	357.8	8.05578	-.315401
30	40.4912	175.387	88.29	4.44222	357.4	4.43755	-.203503
END	40.4912	175.387	98.1	0	0	0	0
GND	-38.3244	265.953	0	.846742	346.2	.822197	-.202393
32	-38.3244	265.953	9.88	.45156	346.3	.438677	-.107091
33	-38.3244	265.953	19.76	.208365	347.1	.203097	-.0465538
34	-38.3244	265.953	29.64	.0261134	1.8	.0261006	8.17E-04
35	-38.3244	265.953	39.52	.108176	160.2	-.10175	.0367281
36	-38.3244	265.953	49.4	.194456	161.6	-.184509	.0613958
37	-38.3244	265.953	59.28	.237034	161.7	-.224981	.074623
38	-38.3244	265.953	69.16	.238383	161.4	-.225898	.076135
39	-38.3244	265.953	79.04	.200983	160.9	-.189975	.0656041
40	-38.3244	265.953	88.92	.126364	160.4	-.119056	.0423495
END	-38.3244	265.953	98.8	0	0	0	0

GND	-58.594	178.215	0	1.62876	23.5	1.4932	.650539
42	-58.594	178.215	9.88	.871501	23.4	.799528	.346798
43	-58.594	178.215	19.76	.404306	22.8	.372783	.156512
44	-58.594	178.215	29.64	.0525007	11.	.0515432	9.98E-03
45	-58.594	178.215	39.52	.206467	208.7	-.181108	-.0991382
46	-58.594	178.215	49.4	.374492	207.4	-.332344	-.172602
47	-58.594	178.215	59.28	.458485	207.4	-.407085	-.210928
48	-58.594	178.215	69.16	.462777	207.6	-.410101	-.214429
49	-58.594	178.215	79.04	.391602	207.9	-.346036	-.183334
50	-58.594	178.215	88.92	.247208	208.3	-.217731	-.117068
END	-58.594	178.215	98.8	0	0	0	0
GND	-78.7271	90.5652	0	11.9396	348.	11.679	-2.48079
52	-78.7271	90.5652	9.85	11.8606	346.2	11.519	-2.82603
53	-78.7271	90.5652	19.7	11.4896	345.1	11.1041	-2.95127
54	-78.7271	90.5652	29.55	10.8453	344.2	10.4371	-2.9476
55	-78.7271	90.5652	39.4	9.94238	343.5	9.53182	-2.8276
56	-78.7271	90.5652	49.25	8.80014	342.8	8.40742	-2.59959
57	-78.7271	90.5652	59.1	7.44185	342.2	7.08674	-2.27139
58	-78.7271	90.5652	68.95	5.89253	341.7	5.59424	-1.85106
59	-78.7271	90.5652	78.8	4.17373	341.2	3.95092	-1.34547
60	-78.7271	90.5652	88.65	2.28907	340.7	2.16072	-.755718
END	-78.7271	90.5652	98.5	0	0	0	0
GND	137.315	76.1151	0	16.0381	306.3	9.49001	-12.9291
62	137.315	76.1151	9.8	16.0808	301.6	8.41683	-13.7022
63	137.315	76.1151	19.6	15.7065	298.7	7.54628	-13.7749
64	137.315	76.1151	29.4	14.9426	296.5	6.65614	-13.3782
65	137.315	76.1151	39.2	13.8003	294.6	5.73477	-12.5523
66	137.315	76.1151	49.	12.3003	292.9	4.78838	-11.33
67	137.315	76.1151	58.8	10.4705	291.5	3.82945	-9.74507
68	137.315	76.1151	68.6	8.34262	290.1	2.87196	-7.83269
69	137.315	76.1151	78.4	5.94473	288.9	1.92797	-5.62341
70	137.315	76.1151	88.2	3.27976	287.8	1.00146	-3.12312
END	137.315	76.1151	98.	0	0	0	0

KFLC - Details of Model for DA-NIGHT - Exhibit 6

Using Expert MININEC Broadcast Professional, Version 14.5, with the individual tower's characteristics that were verified by the individual tower impedance measurements, calculations were made to determine the complex voltage values for sources lacated at ground level under each tower of the array to produce current moment sums for the towers. When normalized these currents equated to the theoretical field parameters of the authorized directional pattern.

Tower 7 of the array, which is not used by the nighttime pattern, was detuned by terminating the tower with a load reactances of +j 420 ohms, shown at the base (node 61) in the tabulation. This value is the opposite sign reactance of the method of moments modeled operating impedance for the directional antenna with a field ratio of 0.00001 specified for Tower 7.

TOWER	Wire	Base Node
1	1	1
2	2	11
3	3	21
4	4	31
5	5	41
6	6	51
7	7	61

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

KFLC Full Nighttime Model

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.27 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	1.88	157.6
3	1.32	-16.7
4	.66	-177.9
5	.94	-3.6
6	.5	-161.2
7	1.E-05	0

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	871.236	99.7	8.49727	357.6
11	1,586.51	242.	15.9822	159.
21	1,054.61	63.9	11.6684	345.3
31	610.784	287.8	5.6448	178.1
41	732.726	75.2	8.28699	358.7
51	462.141	269.8	4.31131	203.6
61	121.769	208.8	.290077	298.7

Sum of square of source currents = 1,165.99
Total power = 5,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00586537	-.00561609
Y(1, 2)	.00197873	.0041678
Y(1, 3)	.000394606	.00067839
Y(1, 4)	-.000120135	.000115407
Y(1, 5)	5.5141E-05	.0002466
Y(1, 6)	.00212873	.00202526
Y(1, 7)	.00223291	.00087446
Y(2, 1)	.00197879	.00416777
Y(2, 2)	.00136175	-.00475855
Y(2, 3)	.00129406	.00453489
Y(2, 4)	.000162394	.000192333
Y(2, 5)	.000396361	.00207867
Y(2, 6)	.000927575	.00352465
Y(2, 7)	.00224556	.00334226
Y(3, 1)	.000394563	.000678383
Y(3, 2)	.00129391	.00453497
Y(3, 3)	.00461099	-.00508264
Y(3, 4)	.00230072	.00206305
Y(3, 5)	.00100408	.00381247
Y(3, 6)	.000307344	.00141313
Y(3, 7)	.00273737	.00178083
Y(4, 1)	-.000120129	.000115401
Y(4, 2)	.000162364	.000192344
Y(4, 3)	.00230076	.00206301
Y(4, 4)	.00616634	-.00641549
Y(4, 5)	.00250906	.003798
Y(4, 6)	.000450038	-1.5629E-05
Y(4, 7)	-3.8692E-05	-.000376468
Y(5, 1)	5.5143E-05	.000246595

Y(5, 2)	.000396303	.00207868
Y(5, 3)	.00100414	.00381246
Y(5, 4)	.00250906	.003798
Y(5, 5)	.00285478	-.00571132
Y(5, 6)	.00213259	.00385204
Y(5, 7)	.000125829	.000173735
Y(6, 1)	.00212869	.00202531
Y(6, 2)	.000927461	.0035247
Y(6, 3)	.000307354	.00141314
Y(6, 4)	.000450022	-1.562E-05
Y(6, 5)	.00213255	.00385205
Y(6, 6)	.00478357	-.00584334
Y(6, 7)	8.1352E-05	.000355994
Y(7, 1)	.00223289	.000874503
Y(7, 2)	.00224544	.00334236
Y(7, 3)	.00273739	.00178083
Y(7, 4)	-3.8704E-05	-.000376457
Y(7, 5)	.000125804	.000173732
Y(7, 6)	8.1358E-05	.000355983
Y(7, 7)	.00819575	-.00579679

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	59.6768	70.464
Z(1, 2)	26.6796	-25.3245
Z(1, 3)	-17.1858	-16.9074
Z(1, 4)	-15.2986	16.0508
Z(1, 5)	-19.6278	-14.9768
Z(1, 6)	9.88944	-31.1536
Z(1, 7)	-8.18626	-26.0172
Z(2, 1)	26.6797	-25.3243
Z(2, 2)	53.175	72.2165
Z(2, 3)	24.4577	-21.4586
Z(2, 4)	-19.5692	-14.9492
Z(2, 5)	6.49031	-28.5445
Z(2, 6)	19.1835	-27.1133
Z(2, 7)	11.0839	-28.9591
Z(3, 1)	-17.186	-16.9071
Z(3, 2)	24.4563	-21.4595
Z(3, 3)	52.7484	64.0945
Z(3, 4)	9.70362	-30.499
Z(3, 5)	18.7188	-26.6266
Z(3, 6)	-5.72104	-25.7926
Z(3, 7)	2.8508	-27.689
Z(4, 1)	-15.2985	16.0509
Z(4, 2)	-19.5693	-14.9489
Z(4, 3)	9.704	-30.4989
Z(4, 4)	56.2284	63.559
Z(4, 5)	25.6691	-26.3027
Z(4, 6)	-17.1904	-18.9756
Z(4, 7)	-15.93	9.82418
Z(5, 1)	-19.6279	-14.9766
Z(5, 2)	6.48965	-28.5445
Z(5, 3)	18.7192	-26.6264
Z(5, 4)	25.6691	-26.3027
Z(5, 5)	52.0296	63.283
Z(5, 6)	25.2243	-23.2757
Z(5, 7)	-20.7989	-.4206
Z(6, 1)	9.88872	-31.1537
Z(6, 2)	19.1825	-27.1137

Z(6, 3)	-5.72097	-25.7927
Z(6, 4)	-17.1904	-18.9755
Z(6, 5)	25.2242	-23.2758
Z(6, 6)	54.2817	63.9283
Z(6, 7)	-21.972	-2.69359
Z(7, 1)	-8.18683	-26.017
Z(7, 2)	11.0828	-28.9593
Z(7, 3)	2.85071	-27.6889
Z(7, 4)	-15.9299	9.82427
Z(7, 5)	-20.7989	-.420455
Z(7, 6)	-21.972	-2.69355
Z(7, 7)	56.566	60.7567

KFLC Full Nighttime Model

KFLC Night

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.35	10
		0	0	99.8		
2	none	90.	283.	0	.35	10
		90.	283.	100.1		
3	none	180.	283.	0	.35	10
		180.	283.	98.1		
4	none	268.7	261.8	0	.35	10
		268.7	261.8	98.8		
5	none	187.6	251.8	0	.35	10
		187.6	251.8	98.8		
6	none	120.	229.	0	.35	10
		120.	229.	98.5		
7	none	157.	331.	0	.35	10
		157.	331.	98.		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.8	2	10.01
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.27	0	1	.0272222	.0278056

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,232.11	99.7	voltage
2	11	1	2,243.66	242.	voltage
3	21	1	1,491.44	63.9	voltage
4	31	1	863.778	287.8	voltage
5	41	1	1,036.23	75.2	voltage
6	51	1	653.567	269.8	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	61	0	420.	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.27	-21.539	100.2	102.49	102.1	****	****	****

```
source =  2; node 11, sector 1
1.27     11.998   98.53    99.257   83.1     20.541  -.84638  -7.5185

source =  3; node 21, sector 1
1.27     17.834   88.624   90.4     78.6     11.884  -1.4652  -5.4309

source =  4; node 31, sector 1
1.27     -36.395  101.82   108.13   109.7    ****    ****     ****

source =  5; node 41, sector 1
1.27     20.659   85.992   88.438   76.5     9.8911  -1.7623  -4.7684

source =  6; node 51, sector 1
1.27     43.204   98.103   107.19   66.2     6.3183  -2.7727  -3.2616

CURRENT rms
Frequency   = 1.27 MHz
Input power = 5,000. watts
Efficiency  = 100. %
coordinates in degrees
current                                mag      phase  real      imaginary
no.    X          Y          Z         (amps)   (deg)  (amps)    (amps)
GND    0          0          0         8.50435  357.6  8.4967    -.360804
 2     0          0          9.98      9.28283  358.7  9.28057   -.20488
 3     0          0          19.96     9.48354  359.4  9.48296   -.105072
 4     0          0          29.94     9.32008  359.8  9.32005   -.0261914
 5     0          0          39.92     8.8255   .2     8.82543   .0346407
 6     0          0          49.9      8.02481  .6     8.02443   .07783
 7     0          0          59.88     6.94338  .9     6.94262   .103021
 8     0          0          69.86     5.6079   1.1    5.60683   .109629
 9     0          0          79.84     4.04195  1.4    4.04078   .0969285
 10    0          0          89.82     2.25157  1.6    2.25067   .0636613
END    0          0          99.8      0        0      0         0
GND    20.2456    87.6933    0         15.9905  158.9  -14.9227  5.74534
 12    20.2456    87.6933    10.01     17.4273  158.3  -16.1912  6.44638
 13    20.2456    87.6933    20.02     17.7877  157.9  -16.4851  6.68161
 14    20.2456    87.6933    30.03     17.4681  157.7  -16.1582  6.63692
 15    20.2456    87.6933    40.04     16.5307  157.5  -15.2671  6.3389
 16    20.2456    87.6933    50.05     15.0226  157.3  -13.8554  5.80586
 17    20.2456    87.6933    60.06     12.9915  157.1  -11.9674  5.05572
 18    20.2456    87.6933    70.07     10.4877  156.9  -9.65005  4.10709
 19    20.2456    87.6933    80.08     7.55543  156.8  -6.94453  2.97622
 20    20.2456    87.6933    90.09     4.20645  156.7  -3.86229  1.66641
END    20.2456    87.6933    100.1     0        0      0         0
GND    40.4912    175.387    0         11.6709  345.3  11.2877   -2.96595
 22    40.4912    175.387    9.81      12.5893  344.3  12.1204   -3.40391
 23    40.4912    175.387    19.62     12.7808  343.8  12.2728   -3.5678
 24    40.4912    175.387    29.43     12.5051  343.4  11.9839   -3.57266
 25    40.4912    175.387    39.24     11.8036  343.1  11.293    -3.4341
 26    40.4912    175.387    49.05     10.7078  342.8  10.2302   -3.16227
 27    40.4912    175.387    58.86     9.2499   342.6  8.82642   -2.76676
 28    40.4912    175.387    68.67     7.46338  342.4  7.11379   -2.25744
 29    40.4912    175.387    78.48     5.37708  342.2  5.11999   -1.64276
 30    40.4912    175.387    88.29     2.99623  342.   2.85023   -.923912
END    40.4912    175.387    98.1      0        0      0         0
GND    -38.3244   265.953    0         5.65108  178.1  -5.64807  .184321
 32    -38.3244   265.953    9.88      6.17639  180.1  -6.17638  -9.09E-03
 33    -38.3244   265.953    19.76     6.31571  181.1  -6.31449  -.124183
 34    -38.3244   265.953    29.64     6.21202  181.9  -6.2086   -.206061
 35    -38.3244   265.953    39.52     5.88708  182.5  -5.88138  -.259027
```

36	-38.3244	265.953	49.4	5.35728	183.	-5.34972	-.284499
37	-38.3244	265.953	59.28	4.63924	183.5	-4.63059	-.283155
38	-38.3244	265.953	69.16	3.75039	183.9	-3.74168	-.255537
39	-38.3244	265.953	79.04	2.70598	184.3	-2.69843	-.202013
40	-38.3244	265.953	88.92	1.50939	184.6	-1.50445	-.121993
END	-38.3244	265.953	98.8	0	0	0	0
GND	-58.594	178.215	0	8.28863	358.7	8.28653	-.186763
42	-58.594	178.215	9.88	8.92222	357.6	8.91428	-.376316
43	-58.594	178.215	19.76	9.0482	357.	9.03553	-.478802
44	-58.594	178.215	29.64	8.84573	356.5	8.82925	-.539748
45	-58.594	178.215	39.52	8.3436	356.1	8.32452	-.563973
46	-58.594	178.215	49.4	7.56404	355.8	7.54375	-.553565
47	-58.594	178.215	59.28	6.53005	355.5	6.5101	-.509981
48	-58.594	178.215	69.16	5.26539	355.3	5.24743	-.434582
49	-58.594	178.215	79.04	3.79081	355.	3.77655	-.328437
50	-58.594	178.215	88.92	2.11046	354.8	2.10179	-.191104
END	-58.594	178.215	98.8	0	0	0	0
GND	-78.7271	90.5652	0	4.31305	203.6	-3.95327	-1.72454
52	-78.7271	90.5652	9.85	4.69822	201.2	-4.37899	-1.70228
53	-78.7271	90.5652	19.7	4.79731	200.	-4.50827	-1.64004
54	-78.7271	90.5652	29.55	4.71487	199.1	-4.4566	-1.53906
55	-78.7271	90.5652	39.4	4.46667	198.3	-4.24096	-1.40192
56	-78.7271	90.5652	49.25	4.06458	197.6	-3.87333	-1.23212
57	-78.7271	90.5652	59.1	3.52063	197.1	-3.36541	-1.03386
58	-78.7271	90.5652	68.95	2.84742	196.6	-2.7293	-.811618
59	-78.7271	90.5652	78.8	2.05583	196.1	-1.97538	-.569461
60	-78.7271	90.5652	88.65	1.14774	195.6	-1.10535	-.309047
END	-78.7271	90.5652	98.5	0	0	0	0
GND	137.315	76.1151	0	.289753	298.8	.13962	-.253896
62	137.315	76.1151	9.8	.162135	298.8	.0781533	-.142055
63	137.315	76.1151	19.6	.0809606	298.9	.0391174	-.0708833
64	137.315	76.1151	29.4	.0171123	299.7	8.47E-03	-.0148716
65	137.315	76.1151	39.2	.0318244	118.1	-.0149808	.0280779
66	137.315	76.1151	49.	.0662306	118.3	-.0314312	.0582972
67	137.315	76.1151	58.8	.0859026	118.4	-.0408062	.0755918
68	137.315	76.1151	68.6	.0904736	118.3	-.0429515	.0796282
69	137.315	76.1151	78.4	.0794696	118.3	-.0376706	.0699739
70	137.315	76.1151	88.2	.0519752	118.2	-.024578	.0457968
END	137.315	76.1151	98.	0	0	0	0

KFLC - Sample System Measurements - Exhibit 7

Using a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler, in a calibrated measurement system, impedance measurements were made of the antenna monitor sampling system. The towers were placed in an open circuited condition by removing the ATU output j-plug. The measurement equipment was connected to the antenna monitor end of the sample lines and measurements were made for two conditions. The first condition was with the sample line terminated in its associated Delta Electronics TCT sampler and the second condition where the sample line was open circuited by disconnecting the line from its TCT.

The following table shows the frequencies of the first and second resonances. As the length of a distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent resonant frequencies, and frequencies of resonance occur at odd multiples of 90 degrees electrical length. The sample line length at the resonant frequency closest to the carrier frequency, was found to be 270 electrical degrees. The electrical lengths at carrier frequency appearing in the following table were calculated by dividing the carrier frequency by the resonant frequency closest to the carrier and multiplying by 270 degrees.

Tower	Sample Line Open-Circuited First Frequency of Resonance (MHZ)	Sample Line Open-Circuited Second Frequency of Resonance (MHZ)	Sample Line Calculated Electrical Length at 1270 kHz (Degrees)	1270 kHz Measured Z with TCT-1-HV Connected (Ohms)
1	.408570	1.235220	277.6	52.9 -j 2.10
2	.409000	1.236070	277.4	52.3 -j 1.86
3	.409080	1.236410	277.3	52.1 -j 1.98
4	.409420	1.236760	277.3	54.1 -j 1.91
5	.409080	1.235560	277.5	52.2 -j 1.69
6	.409080	1.235560	277.5	52.4 -j 1.54
7	.408910	1.235220	277.6	52.0 -j 1.79

The sample line lengths meet the specification that they be equal in length within one electrical degree.

The Characteristic impedance was calculated using the following formula, where R1 +jX1 and R2 +jX2 are the measured impedances at the +45 and -45 degree offset frequencies respectively:

$$Zo = ((R1^2 + X1^2)^{1/2} \bullet (R2^2 + X2^2)^{1/2})^{1/2}$$

Tower	+45 Degree Offset Frequency (MHz)	+45 Degree Measured Impedance (Ohms)	-45 Degree Offset Frequency (MHz)	-45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
1	1.4404	5.67 +j50.04	1.0301	4.00 -j50.12	50.32
2	1.4414	5.75 +j50.00	1.0320	3.97 -j50.00	50.25
3	1.4410	5.43 +j50.04	1.0320	3.60 -j50.02	50.25
4	1.4418	5.50 +j50.03	1.0324	3.70 -j50.05	50.39
5	1.4409	5.42 +j50.04	1.0320	3.71 -j50.03	50.25
6	1.4414	5.52 +j50.03	1.0322	3.78 -j50.05	50.26
7	1.4406	5.48 +j50.03	1.0312	3.69 -j50.07	50.27

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

The TCTs were calibrated by measuring their outputs with a common reference signal using a Hewlett-Packard 8753C network analyzer in a calibrated measurement system. The TCTs were placed side by side, bolted to a two inch wide piece of copper strap with a conductor passing the reference signal through them. The outputs of the TCTs were fed into the Channel A and Channel B receiver inputs of the 8753C, which was set up to measure the relative ratios and phases of the output voltages. The following results were measured for the carrier frequency, 1270 kHz:

Tower	Ratio	Phase (deg)	TCT Model #	TCT Serial #
1	1.0027	+0.39125	TCT-1-HV	3176
2	1.0024	+0.38452	TCT-1-HV	3137
3	Reference	Reference	TCT-1-HV	3174
4	1.0021	-0.24731	TCT-1-HV	3172
5	1.0001	+0.0208	TCT-1-HV	3175
6	1.0012	+0.2278	TCT-1-HV	3173
7	1.0010	+0.2486	TCT-1-HV	3139

TCT-1-HV are 0.5 Volt/amp toroidal current transformers manufactured by Delta Electronics. These TCTs are rated for absolute magnitude accuracy of +/- 2% and absolute phase accuracy of +/- 3 degrees. The maximum measured transformer-to-transformer variations among the seven were 0.26% and 0.4 degree, and as such provide far more accurate relative indications than could be the case within the manufacturer's rated accuracy.

KFLC - Reference Field Strength Measurements - Exhibit 8

Reference field strength measurements were made using the KFLC FIM-41 meter, the meter being of known calibration. Measurements were made at three point locations along each monitored radial and along a radial thru the major lobe of each directional pattern. The following pages contain the measured field strength values, the GPS coordinates and point descriptions.

KFLC, 1270 kHz.

Daytime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates Lat. N	(NAD 83) Long. W	Description
85	1	3.61	840.0	32-43-43.6	97-09-13.8	2816 Olympia Street at mailbox.
	2	5.00	580.0	32-43-43.8	97-08-21.1	Corner of Ravenwood & Second St, west edge of Ravenwood.
	3	5.83	290.0	32-43-52.6	97-07-49.2	Second Street & Charles Street, at "No Outlet" sign.
184.6	1	3.15	86.0	32-41-54.8	97-11-43.2	5789 Valley Meadow Drive at mailbox.
	2	3.49	88.0	32-41-44.5	97-11-46.9	5707 Trail Lake Drive, in line with front door.
	3	4.56	54.0	32-41-09.3	97-11-46.7	3827 Helmsford Drive, center of driveway at street.
219	1	6.47	74.0	32-40-52.8	97-14-08.0	Kay Street & David Strickland Road, at street sign.
	2	6.88	70.5	32-40-41.4	97-14-16.0	Cameron St & Kaltenbrun St, corner diagonally from street sign.
	3	7.84	99.0	32-40-19.2	97-14-41.5	5815 Redwood Drive, at edge of street even with "Manager" sign.
245	1	3.94	160.0	32-42-42.8	97-13-48.6	Richardson St & I-820 Access Rd, at street sign.
	2	5.07	131.0	32-42-27.3	97-14-29.0	3725 Lauretta Drive, at mailbox.
	3	5.38	81.0	32-42-23.6	97-14-40.6	5130 Eastland Street, at mailbox.

KFLC, 1270 kHz.

Nighttime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
9.0	1	3.05	97.0	32-45-13.7	97-11-13.9	1721 Deauville Street, at mailbox.
	2	4.13	44.5	32-45-48.6	97-11-10.5	Center of road at dead-end of West Lane.
	3	5.99	30.0	32-46-47.0	97-10-53.7	Even with front door of River Botton Pub on Randol Mill Road.
33.5	1	3.42	57.5	32-45-07.6	97-10-18.9	Brentwood Stair & Eastchase, at vent pipes, Race Track station.
	2	4.80	30.0	32-45-46.9	97-09-52.7	Lowe's parking lot, east side, at 3 red diamond shape signs.
	3	5.70	24.5	32-46-09.9	97-09-31.0	Racquet Club Drive & Hunter's Glen Street, at street sign.
85	1	3.61	292.0	32-43-43.6	97-09-13.8	2816 Olympia Street at mailbox.
	2	5.00	195.0	32-43-43.8	97-08-21.1	Corner of Ravenwood & Second St, west edge of Ravenwood.
	3	5.83	105.0	32-43-52.6	97-07-49.2	Second Street & Charles Street, at "No Outlet" sign.
136	1	3.04	132.0	32-42-25.8	97-10-11.2	In drive next to Hearth Stone sign, 4101 Arkansas
	2	4.05	97.0	32-42-02.7	97-09-43.6	At street sign of Spanish Trial & Cimarron Park Drive.
	3	4.53	50.0	32-41-51.4	97-09-30.9	2819 Park Drive, center of driveway at street.
172	1	3.35	35.5	32-41-49.6	97-11-11.8	5304 Waterview Drive, center of driveway at street.
	2	4.62	25.0	32-41-08.8	97-11-06.1	5000 French Wood Drive, at street even with front door.
	3	5.56	18.0	32-40-38.8	97-11-02.5	4900 Oldfield Drive at mailbox.
219	1	6.47	51.0	32-40-52.8	97-14-08.0	Kay Street & David Strickland Road, at street sign.
	2	6.88	45.0	32-40-41.4	97-14-16.0	Cameron St & Kaltenbrun St, corner diagonally from street sign.
	3	7.84	49.0	32-40-19.2	97-14-41.5	5815 Redwood Drive, at edge of street even with "Manager" sign.

KFLC, 1270 kHz.

Nighttime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
270	1	3.71	300.0	32-43-36.1	97-13-55.3	1821 Carverly Drive, at drive and edge of street at rickety gate.
	2	5.41	155.0	32-43-35.6	97-15-00.4	At sign for Stewart Chapel CME Church.
	3	6.45	57.0	32-43-37.3	97-15-40.4	4217 Avenue J, center of driveway and edge of street.
337.5	1	4.23	53.0	32-45-43.1	97-12-33.4	On Anderson Blvd, at sign for employees picnic area.
	2	5.22	37.5	32-46-12.3	97-12-48.3	Mandy Lane & Loop 820 access road, at street sign.
	3	6.21	37.5	32-46-39.7	97-13-09.6	6493 Randol Mill Road, across street even with mailbox.

KFLC - Direct Measurement of Power - Exhibit 9

Measurement of the Common Point Impedance was made with the installed Common Point Bridge. The bridge contains the station common point current meter. The resistance value was adjusted with the common point matching network to provide the correct impedance at the authorized common point current value for each directional antenna pattern. The measured Common Point Impedance is R = 50.05 Ohms, X= -j 0.1 Ohms for both Day and Night operation. The common point currents of 32.4 Amperes for Daytime and 10.4 Amperes for Nighttime were established.

KFLC - Antenna Monitor and Sample System - Exhibit 10

KFLC utilizes a Potomac Instruments AM-1901 antenna monitor. The antenna monitor is provided an ATU output sample over equal length (see Exhibit 7) sample lines from Delta Electronics Toroidal Current Transformers, model TCT-1-HV, that provides a 0.5 volt per ampere. The sample lines are LDF-12-50J, ½ inch foam dielectric coaxial cable. Equal length short pieces of RG-58 cable facilitae connection to the antenna monitor in the equipment rack.

KFLC - Radio Frequency Radiation Considerations - Exhibit 11

Operation of KFLC will not result in exposure of the workers or the general public to levels of non-ionizing energy in excess of the limits specified in 47 CFR 1.1310. Access to the transmitter site is restricted by locked fences. Each tower base is enclosed within a locked perimeter fence spaced in accordance with Recommended Guidelines. Warning signs are posted on the entry gate and on all four sides of each tower base fence. The signs state that a potential exists for possible exposure to hazardous R.F. energy. In the case where personnel must enter the tower enclosure fences, operation is switched to non-directional operation at reduced power on either Tower 5 or Tower 7 in accordance with the KFLC RFR Plan.

KFLC - Summary of As Built Certified Array Geometry - Exhibit 12

The tower locations, as built, in relationship to Tower 1 and referenced to True North are provided in the certified document by James DeOtte Engineering, Inc., and contained in Appendix A. The following table shows the spacings and azimuths and their deviations from the specified base locations.

The "as-built" KFLC towers deviate from their specified locations by less than 0.5 degree (electrical at 1270 kHz) and are well below the anticipated tolerance of 1.5 degrees.

Station Tower Geometry Analysis

- Enter Requested Data in Yellow Blocks

Callsign:	KFLC	*Reference Tower:*	1
Freq. (kHz):	1270 kHz	*Feet per wavelength:*	774.4653988

Tower Pair Studied	*Licensed Spacing (Electrical degrees)*	*Licensed Azimuth (Degrees True)*	*Measured Distance (feet)*	*Measured Azimuth (Degrees True)*	*Tower Location Error from Licensed (Result in Feet)*	*Tower Location Error from Licensed (Electrical Degrees)*
1 (ref)	0.0	0.0	0.0	0.0		
1 to 2	90.0	283.0	193.399	282.845	0.57	0.26 °
1 to 3	180.0	283.0	386.371	282.986	0.87	0.40 °
1 to 4	268.7	261.8	577.411	261.783	0.66	0.31 °
1 to 5	187.6	251.8	403.209	251.743	0.55	0.25 °
1 to 6	120.0	229.0	258.540	228.913	0.55	0.26 °
1 to 7	157.0	331.0	337.290	330.889	0.80	0.37 °
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					--	--

Law of Cosines Analysis

Tower Pair Studied	Licensed Specification (Side "a") of Triangle (Feet)	Licensed Azimuth Versus Measured Azimuth Difference	Included Angle A Converted to Radians	Tower Location Error from licensed position (Result in Feet)	Error in Feet Converted to Electrical Degrees	*Error Greater Greater Than 1.5° ? (3.23 ft)*
1 to 2	193.62	0.1550 °	0.00270526	0.57	0.26 °	No - Therefore Okay
1 to 3	387.23	0.0140 °	0.000244346	0.87	0.40 °	No - Therefore Okay
1 to 4	578.05	0.0170 °	0.000296706	0.66	0.31 °	No - Therefore Okay
1 to 5	403.58	0.0570 °	0.000994838	0.55	0.25 °	No - Therefore Okay
1 to 6	258.16	0.0870 °	0.001518436	0.55	0.26 °	No - Therefore Okay
1 to 7	337.75	0.1110 °	0.001937315	0.80	0.37 °	No - Therefore Okay
0	--	--	--	--	--	--
0	--	--	--	--	--	--

Appendix A

Certification of Tower Location
James DeOtte Engineering, Inc.

James DeOtte Engineering, Inc.

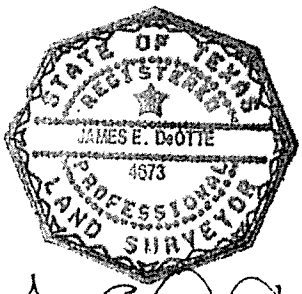
6707 Brentwood Stair Road, Suite 520
Fort Worth, TX 76112
Tel: (817) 446-6877 Fax: (817) 930-0445

KFLC Site
Arlington, Texas

JDEI File 2004102
June 23, 2009

Having Tower # 1 of the KFLC array as the reference, the as-built distance and bearing to each of the other towers is certified to be:

Tower	Spacing (M)	Astronomic Az
2	58.9483	282.8453°
3	117.7656	282.9856°
4	175.9946	261.7825°
5	122.8984	251.7425°
6	78.8030	228.9128°
7	102.8060	330.8889°



James E. DeOtte, R.P.L.S.
23 June 2009