58393 20100421ADI ORIGINAL

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August 2, 2010

Via Hand Delivery
Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

0001605864

Re: Station WLNO(AM)
New Orleans, LA
Facility ID No. 58393
BMML-20100421ADI

Dear Madame:

Enclosed for filing in triplicate is an amendment to the above-referenced application, filed in response to the Audio Division's letter (1800B2-EAL), dated July 9, 2010.

Should there be any questions, please contact the undersigned counsel or Lyndon Willoughby, the client's engineering consultant, at the telephone number specified in the amendment.

Sincerely,

Howard M. Weiss

HMW/eo
Enclosures
cc: Mr. Carl Di Maria (w/encls.) ("Public File")
Mr. Lyndon Willoughby (w/o encls.)

AMENDMENT TO BMML-20100421ADI
FCC FORM 302-AM, SECTION III

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

RADIO STATION WLNO
(Facility ID # 58393)

COMMUNICOM CO. of LOUISIANA, L.P.

1060 kHz, 5.0/50.0 kW, DA-2

NEW ORLEANS, LOUISIANA

APRIL, 2010

WILLOUGHBY & VOSS
BROADCAST TECHNICAL CONSULTANTS
P.O. BOX 701190
SAN ANTONIO, TEXAS 78270-1190
(210) 525-1111

COMMUNICOM CO. of LOUISIANA, L.P.
WLNO RADIO
1060 kHz, 5.0/50.0 kW, DA-2
NEW ORLEANS, LOUISIANA
APRIL, 2010

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

FCC Form 302, Section III

Technical Summary Statement

Exhibits:

1. Verification of Method of Moments Model
2. DA-Day Operating Parameter Determination
3. DA-Night Operating Parameter Determination
4. Details of Model for Towers Individually Driven
5. Details of Model for DA-DAY
6. Details 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. Statement Regarding As Built Array Geometry

Amended

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
Communicom Co. of Louisiana, L.P.

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
WLNO		1060	Unlimited	5.0	50.0

2. Station location	
State	City or Town
Louisiana	New Orleans

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
LA	Plaquemine Parish	Belle Chase	300 Woodland Hwy.

4. Main studio location			
State	County	City or Town	Street address (or other identification)
LA	Jefferson Parish	Gretna	401 Whitney Ave., Ste. 160

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
LA	Jefferson Parish	Gretna	401 Whitney Ave., Ste. 160

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. Exh. 7

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 32.4
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 -j 10.0 Day -j 10.0

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 (SE)	-4.5		0.498			
2 (EC)	0.0		1.000			
3 (NE)	+1.6	+88.1	0.541	1.025		
4 (SW)	+76.0		0.456			
5 (WC)	+79.8		0.930			
6 (NW)	+84.0		0.501			

Manufacturer and type of antenna monitor: Potomac Instruments 1901-7, Ser #785

DAY 7 (N) 0.0 1.000

Amended

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.
7 uniform cross-section, base insulated, guyed, steel towers.	70.71	71.6	72.3	Exhibit No. DNA

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
29 ° 52 ' 46 "	89 ° 59 ' 51 "

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. DNA

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

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

Does Not Apply

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	Lyndon H. Willoughby
Address (include ZIP Code)	Date
Willoughby & Voss, LLC. P.O. Box 701190 San Antonio, Texas 78270-1190	July 26, 2010 (Amended)
	Telephone No. (Include Area Code)
	210-862-5285

☐ Technical Director ☐ Registered Professional Engineer

☐ Chief Operator ☒ Technical Consultant

☐ Other (specify)

WLNO - Technical Summary Statement
(AMENDED to BMML-20100421ADI)

These technical exhibits support an application for station license for radio station WLNO, New Orleans, Louisiana. WLNO operates on 1060 kHz, and WLNO is currently licensed by the FCC.

The instant amendment of a pending application, for WLNO is in response to a deficiency letter from FCC staff member, Ann Gallagher and contains the curative information. The detuning networks for unused towers in each array were reconfigured to provide effective detuning.

Information is provided herein demonstrating that the directional antenna parameters for both the daytime and nighttime patterns (DA-2), have been determined in accordance with the requirements of Section 73.151(c) of the FCC Rules. The system has been adjusted to produce antenna monitor parameters within +/- 5 percent in ratio and +/- 3 degrees in phase of the modeled values, as required by the Rules.

Lyndon H. Willoughby
Willoughby & Voss, LLC.
July 26, 2010

WLNO - 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 58 kohm) static drain coils. Due to the high impedance of the static drains, they exhibited no effect on the circuit impedance but were included 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 0.00003 uF for all towers appear at C 3>0 on the WCAP printout.

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 - WLNO T1 OC Self analysis 03242010

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	101.9560 ∠	47.6443° V
Node:	2	101.3194 ∠	48.0790° V
Node:	3	94.6003 ∠	44.6518° V

	WCAP PART		CURRENT IN	CURRENT OUT
	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	1.34000000	8.91 ∠ 87.465° V	1.00 ∠ -2.535° A
R	1→2	1.00000000	1.00 ∠ -2.600° V	1.00 ∠ -2.600° A
C	3→0	0.00003000	94.60 ∠ 44.652° V	0.02 ∠ 134.652° A
R	3→0	62.61800000	94.60 ∠ 44.652° V	1.01 ∠ -3.262° A
L	2→0	8558.00000000	101.32 ∠ 48.079° V	0.00 ∠ -41.921° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	1.34000000	64.38 + j 78.417	64.38 + j 69.492
R	1→2	1.00000000	65.20 + j 78.382	64.20 + j 78.382
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	62.61800000	62.62 + j 69.335	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	1.34000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	357.40000000
C	0.00003000	3	0	
R	62.61800000	3	0	69.33500000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T2 OC Self analysis 03242010

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	99.3968 ∠	46.6906° V
Node:	2	98.7475 ∠	47.1305° V
Node:	3	94.0197 ∠	44.6374° V

	WCAP PART		CURRENT IN	CURRENT OUT

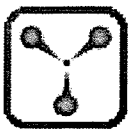
	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	0.95000000	6.32 ∠ 87.464° V	1.00 ∠ -2.536° A
R	1→2	1.00000000	1.00 ∠ -2.600° V	1.00 ∠ -2.600° A
C	3→0	0.00003000	94.02 ∠ 44.637° V	0.02 ∠ 134.637° A
R	3→0	62.25800000	94.02 ∠ 44.637° V	1.01 ∠ -3.258° A
L	2→0	8558.00000000	98.75 ∠ 47.130° V	0.00 ∠ -42.870° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	0.95000000	64.00 + j 75.373	64.00 + j 69.046
R	1→2	1.00000000	64.83 + j 75.346	63.83 + j 75.346
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	62.25800000	62.26 + j 68.892	0.00 + j 0.000
L	2→0	8558.00000000	0.01 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

	1.0600	0.00001000	1	
L	0.95000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	357.40000000
C	0.00003000	3	0	
R	62.25800000	3	0	68.89200000
L	8558.00000000	2	0	0.00000000



WCAP - WLNO T3 OC Self analysis 03242010

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	101.6695 ∠	51.0504° V
Node:	2	101.0800 ∠	51.5069° V
Node:	3	88.0155 ∠	45.0625° V

	WCAP PART	CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	2.53000000	16.83 ∠ 87.460° V	1.00 ∠ -2.540° A
R	1→2	1.00000000	1.00 ∠ -2.600° V	1.00 ∠ -2.600° A
C	3→0	0.00003000	88.02 ∠ 45.062° V	0.02 ∠ 135.062° A
R	3→0	57.90700000	88.02 ∠ 45.062° V	1.01 ∠ -3.212° A
L	2→0	8558.00000000	101.08 ∠ 51.507° V	0.00 ∠ -38.493° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	2.53000000	59.43 + j 81.942	59.43 + j 65.092
R	1→2	1.00000000	60.26 + j 81.886	59.26 + j 81.886
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	57.90700000	57.91 + j 64.935	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	2.53000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	357.40000000
C	0.00003000	3	0	
R	57.90700000	3	0	64.93500000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T4 OC Self analysis 032410

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	97.8792 ∠	47.7920° V
Node:	2	97.2447 ∠	48.2459° V
Node:	3	88.9646 ∠	43.7455° V

	WCAP PART		CURRENT IN	CURRENT OUT
	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	1.66000000	11.04 ∠ 87.462° V	1.00 ∠ -2.538° A
R	1→2	1.00000000	1.00 ∠ -2.600° V	1.00 ∠ -2.600° A
C	3→0	0.00003000	88.96 ∠ 43.745° V	0.02 ∠ 133.745° A
R	3→0	60.00100000	88.96 ∠ 43.745° V	1.01 ∠ -3.234° A
L	2→0	8558.00000000	97.24 ∠ 48.246° V	0.00 ∠ -41.754° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	1.66000000	61.56 + j 75.442	61.56 + j 64.386
R	1→2	1.00000000	62.40 + j 75.409	61.40 + j 75.409
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	60.00100000	60.00 + j 64.297	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

```
      1.0600      0.00001000   1
L       1.66000000   2   3      0.00000000
R       1.00000000   1   2      0.00000000
I       1.00000000   0   1    357.40000000
C       0.00003000   3   0
R      60.00100000   3   0     64.29700000
L    8558.00000000   2   0      0.00000000
```

WCAP - WLNO T5 OC Self analysis 032410

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	98.2833 ∠	47.1134° V
Node:	2	97.6396 ∠	47.5610° V
Node:	3	90.6448 ∠	43.7555° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	1.41000000	9.38 ∠	87.463° V	1.00 ∠	-2.537° A
R	1→2	1.00000000	1.00 ∠	-2.600° V	1.00 ∠	-2.600° A
C	3→0	0.00003000	90.64 ∠	43.755° V	0.02 ∠	133.755° A
R	3→0	61.09400000	90.64 ∠	43.755° V	1.01 ∠	-3.246° A
L	2→0	8558.00000000	97.64 ∠	47.561° V	0.00 ∠	-42.439° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	1.41000000	62.72 + j 75.002	62.72 + j 65.611
R	1→2	1.00000000	63.55 + j 74.972	62.55 + j 74.972
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	61.09400000	61.09 + j 65.518	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.0600	0.00001000	1	
L	1.41000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	357.40000000
C	0.00003000	3	0	
R	61.09400000	3	0	65.51800000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T6 OC Self analysis 03242010

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	103.2881 ∠	48.9576° V
Node:	2	102.6694 ∠	49.3947° V
Node:	3	90.6391 ∠	43.1609° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	2.40000000	15.96 ∠	87.464° V	1.00 ∠	-2.536° A
R	1→2	1.00000000	1.00 ∠	-2.600° V	1.00 ∠	-2.600° A
C	3→0	0.00003000	90.64 ∠	43.161° V	0.02 ∠	133.161° A
R	3→0	61.77300000	90.64 ∠	43.161° V	1.01 ∠	-3.253° A
L	2→0	8558.00000000	102.67 ∠	49.395° V	0.00 ∠	-40.605° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
L	2→3	2.40000000	63.40 + j	80.943	63.40 + j	64.959
R	1→2	1.00000000	64.22 + j	80.899	63.22 + j	80.899
C	3→0	0.00003000	0.00 - j	5004.872	0.00 + j	0.000
R	3→0	61.77300000	61.77 + j	64.899	0.00 + j	0.000
L	2→0	8558.00000000	0.01 + j	56997.790	0.00 + j	0.000

WCAP PART	VSWR

WCAP INPUT DATA:

	1.0600	0.00001000	1	
L	2.40000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	357.40000000
C	0.00003000	3	0	
R	61.77300000	3	0	64.89900000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T7 OC Self analysis 03242010

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	101.0026 ∠	53.7085° V
Node:	2	100.4513 ∠	54.1830° V
Node:	3	81.0114 ∠	44.5907° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	3.70000000	24.61 ∠ 87.455° V	1.00 ∠ -2.545° A
R	1→2	1.00000000	1.00 ∠ -2.600° V	1.00 ∠ -2.600° A
C	3→0	0.00003000	81.01 ∠ 44.591° V	0.02 ∠ 134.591° A
R	3→0	53.89600000	81.01 ∠ 44.591° V	1.01 ∠ -3.169° A
L	2→0	8558.00000000	100.45 ∠ 54.183° V	0.00 ∠ -35.817° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	3.70000000	55.19 + j 84.109	55.19 + j 59.466
R	1→2	1.00000000	56.03 + j 84.038	55.03 + j 84.038
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	53.89600000	53.90 + j 59.355	0.00 + j 0.000
L	2→0	8558.00000000	-0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

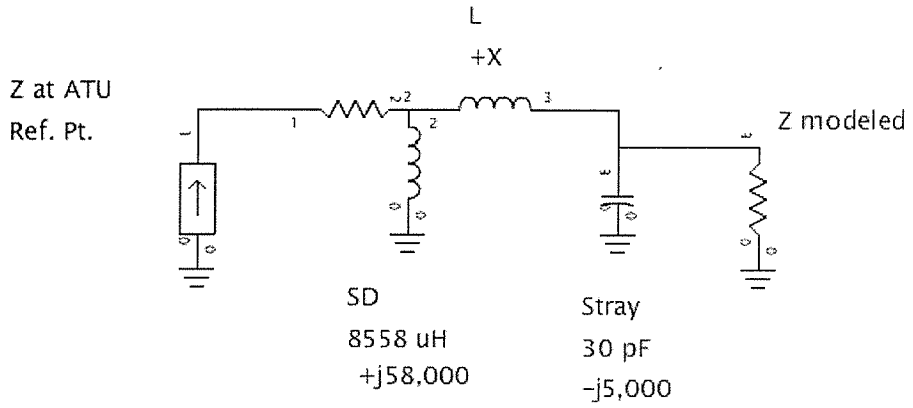
WCAP INPUT DATA:

1.0600 0.00001000 1

L	3.70000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	357.40000000
C	0.00003000	3	0	
R	53.89600000	3	0	59.35500000
L	8558.00000000	2	0	0.00000000

VERIFICATION OF METHOD OF MOMENTS MODEL

WLNO, 1060 kHz, 5.0/50.0 kW, DA-2
New Orleans, Louisiana



TWR	L(uH)	XL	Xoc	Z modeled	Z ATU (model)	Z ATU (msrd)
1	1.34	+j 8.93	-j 5000	62.62 +j 69.34	64.20 +j 78.38	64.32 +j 78.38
2	0.95	+j 6.33	-j 5000	62.26 +j 68.89	63.83 +j 75.35	64.04 +j 75.48
3	2.53	+j 16.9	-j 5000	57.91 +j 64.94	59.26 +j 81.88	59.13 +j 81.90
4	1.66	+j 11.1	-j 5000	60.00 +j 64.30	61.40 +j 75.41	61.94 +j 75.39
5	1.41	+j 9.39	-j 5000	61.09 +j 65.52	62.55 +j 74.97	62.81 +j 74.70
6	2.40	+j 16.0	-j 5000	61.77 +j 64.90	63.22 +j 80.90	63.15 +j 80.90
7	3.70	+j 24.6	-j 5000	53.90 +j 59.36	55.03 +j 84.04	54.93 +j 84.00

WLNO - DA-DAY Operating Parameter Determination - Exhibit 2 Amended

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.

Since the TCT samplers and the sampling lines are near identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled ATU currents.

WILLOUGHBY & VOSS

WLNO - DA-DAY Operating Parameter Determination - Exhibit 2 Amended

WLNO, 1060 kHz, 5.0/50.0 kW, DA-2

New Orleans, Louisiana

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
3	21	21.16	+ 98.4	1.025	+88.1
7	61	20.65	+ 10.3	1.000	0.0

WCAP - WLNO T3 DA-Day base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	1648.9917 ∠	166.9598° V
Node:	2	1641.3752 ∠	167.6473° V
Node:	3	1314.5281 ∠	162.1321° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	2.53000000	356.10 ∠ -171.572° V	21.13 ∠ 98.428° A
R	1→2	1.00000000	21.16 ∠ 98.400° V	21.16 ∠ 98.400° A
C	3→0	0.00003000	1314.53 ∠ 162.132° V	0.26 ∠ -107.868° A
R	3→0	26.95100000	1314.53 ∠ 162.132° V	21.37 ∠ 98.116° A
L	2→0	8558.00000000	1641.38 ∠ 167.647° V	0.03 ∠ 77.647° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	2.53000000	27.56 + j 72.616	27.56 + j 55.766
R	1→2	1.00000000	28.49 + j 72.537	27.49 + j 72.537
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	26.95100000	26.95 + j 55.298	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

	1.0600	0.00001000	1	
L	2.53000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	21.16000000	0	1	98.40000000
C	0.00003000	3	0	
R	26.95100000	3	0	55.29800000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T7 DA-Day base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	2654.0487 ∠	56.2026° V
Node:	2	2639.7231 ∠	56.5246° V
Node:	3	2300.4574 ∠	47.7233° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	3.70000000	508.05 ∠ 100.379° V	20.62 ∠ 10.379° A
R	1→2	1.00000000	20.65 ∠ 10.290° V	20.65 ∠ 10.290° A
C	3→0	0.00003000	2300.46 ∠ 47.723° V	0.46 ∠ 137.723° A
R	3→0	86.33100000	2300.46 ∠ 47.723° V	20.90 ∠ 9.377° A
L	2→0	8558.00000000	2639.72 ∠ 56.525° V	0.05 ∠ -33.475° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	3.70000000	88.71 + j 92.329	88.71 + j 67.686
R	1→2	1.00000000	89.42 + j 92.317	88.42 + j 92.317
C	3→0	0.00003000	-0.00 - j 5004.872	0.00 + j 0.000
R	3→0	86.33100000	86.33 + j 68.293	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

```
      1.0600       0.00001000   1
L        3.70000000   2   3      0.00000000
R        1.00000000   1   2      0.00000000
I       20.65000000   0   1     10.29000000
C        0.00003000   3   0
R       86.33100000   3   0     68.29300000
L     8558.00000000   2   0      0.00000000
```

WLNO - DA-NIGHT Operating Parameter Determination - Exhibit 3 Amended

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.

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.

WLNO - DA-NIGHT Operating Parameter Determination - Exhibit 3 Amended

WLNO, 1060 kHz, 5.0/50.0 kW, DA-2

New Orleans, Louisiana

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
1	1	3.55	+2.50	0.498	-4.5
2	11	7.13	+7.00	1.000	00.0
3	21	3.86	+8.58	0.541	+1.6
4	31	3.25	+83.03	0.456	+76.0
5	41	6.63	+86.76	0.930	+79.8
6	51	3.57	+91.00	0.501	+84.0

WCAP - WLNO T1 DA-Night base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	221.3584 ∠	71.8169° V
Node:	2	220.1296 ∠	72.6813° V
Node:	3	190.6610 ∠	69.4516° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	1.34000000	31.65 ∠ 92.521° V	3.55 ∠ 2.521° A
R	1→2	1.00000000	3.55 ∠ 2.500° V	3.55 ∠ 2.500° A
C	3→0	0.00003000	190.66 ∠ 69.452° V	0.04 ∠ 159.452° A
R	3→0	20.65600000	190.66 ∠ 69.452° V	3.58 ∠ 2.282° A
L	2→0	8558.00000000	220.13 ∠ 72.681° V	0.00 ∠ -17.319° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	1.34000000	21.07 + j 58.388	21.07 + j 49.463
R	1→2	1.00000000	22.02 + j 58.336	21.02 + j 58.336
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	20.65600000	20.66 + j 49.065	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	1.34000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	3.55000000	0	1	2.50000000
C	0.00003000	3	0	
R	20.65600000	3	0	49.06500000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T2 DA-Night base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	368.4145 ∠	71.3427° V
Node:	2	365.3839 ∠	72.3506° V
Node:	3	324.9677 ∠	69.0315° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	0.95000000	45.08 ∠	97.022° V	7.12 ∠	7.022° A
R	1→2	1.00000000	7.13 ∠	7.000° V	7.13 ∠	7.000° A
C	3→0	0.00003000	324.97 ∠	69.031° V	0.06 ∠	159.031° A
R	3→0	21.06700000	324.97 ∠	69.031° V	7.18 ∠	6.778° A
L	2→0	8558.00000000	365.38 ∠	72.351° V	0.01 ∠	-17.649° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	0.95000000	21.41 + j 46.606	21.41 + j 40.279
R	1→2	1.00000000	22.37 + j 46.576	21.37 + j 46.576
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	21.06700000	21.07 + j 40.047	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	0.95000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	7.13000000	0	1	7.00000000
C	0.00003000	3	0	
R	21.06700000	3	0	40.04700000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T3 DA-Night base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	125.8554 ∠	99.6200° V
Node:	2	125.9846 ∠	101.3754° V
Node:	3	61.1396 ∠	104.3494° V

	WCAP PART		CURRENT IN		CURRENT OUT	

	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	2.53000000	65.00 ∠	98.578° V	3.86 ∠	8.578° A
R	1→2	1.00000000	3.86 ∠	8.580° V	3.86 ∠	8.580° A
C	3→0	0.00003000	61.14 ∠	104.349° V	0.01 ∠	-165.651° A
R	3→0	-1.58360000	61.14 ∠	104.349° V	3.87 ∠	8.597° A
L	2→0	8558.00000000	125.98 ∠	101.375° V	0.00 ∠	11.375° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
L	2→3	2.53000000	-1.59 + j	32.618	-1.59 + j	15.768
R	1→2	1.00000000	-0.59 + j	32.600	-1.59 + j	32.600
C	3→0	0.00003000	-0.00 - j	5004.872	0.00 + j	0.000
R	3→0	-1.58360000	-1.58 + j	15.719	0.00 + j	0.000
L	2→0	8558.00000000	0.00 + j	56997.790	0.00 + j	0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

	1.0600	0.00001000	1	
L	2.53000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	3.86000000	0	1	8.58000000
C	0.00003000	3	0	
R	-1.58360000	3	0	15.71900000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T4 DA-Night base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	393.6032 ∠	141.6061° V
Node:	2	391.9186 ∠	142.0115° V
Node:	3	361.6754 ∠	139.0769° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	1.66000000	35.87 ∠	173.093° V	3.24 ∠	83.093° A
R	1→2	1.00000000	3.25 ∠	83.030° V	3.25 ∠	83.030° A
C	3→0	0.00003000	361.68 ∠	139.077° V	0.07 ∠	-130.923° A
R	3→0	60.11800000	361.68 ∠	139.077° V	3.30 ∠	82.392° A
L	2→0	8558.00000000	391.92 ∠	142.012° V	0.01 ∠	52.012° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	1.66000000	62.37 + j 103.466	62.37 + j 92.410
R	1→2	1.00000000	63.14 + j 103.346	62.14 + j 103.346
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	60.11800000	60.12 + j 91.470	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	1.66000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	3.25000000	0	1	83.03000000
C	0.00003000	3	0	
R	60.11800000	3	0	91.47000000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T5 DA-Night base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	669.6599 ∠	143.5180° V
Node:	2	666.0486 ∠	143.9951° V
Node:	3	614.7271 ∠	140.8529° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
L	2→3	1.41000000	62.17 ∠	176.815° V	6.62 ∠	86.815° A
R	1→2	1.00000000	6.63 ∠	86.760° V	6.63 ∠	86.760° A
C	3→0	0.00003000	614.73 ∠	140.853° V	0.12 ∠	-129.147° A
R	3→0	52.92200000	614.73 ∠	140.853° V	6.72 ∠	86.200° A
L	2→0	8558.00000000	666.05 ∠	143.995° V	0.01 ∠	53.995° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	1.41000000	54.53 + j 84.550	54.53 + j 75.159
R	1→2	1.00000000	55.37 + j 84.476	54.37 + j 84.476
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	52.92200000	52.92 + j 74.615	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	1.41000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	6.63000000	0	1	86.76000000
C	0.00003000	3	0	
R	52.92200000	3	0	74.61500000
L	8558.00000000	2	0	0.00000000

WCAP - WLNO T6 DA-Night base area 07/10

WCAP OUTPUT AT FREQUENCY: 1.060 MHz

NODE VOLTAGES

Node:	1	291.2667 ∠	143.1780° V
Node:	2	289.0913 ∠	143.7369° V
Node:	3	246.1934 ∠	135.6694° V

	WCAP PART		CURRENT IN	CURRENT OUT

	WCAP PART		BRANCH VOLTAGE	BRANCH CURRENT
L	2→3	2.40000000	57.00 ∠ -178.951° V	3.57 ∠ 91.049° A
R	1→2	1.00000000	3.57 ∠ 91.000° V	3.57 ∠ 91.000° A
C	3→0	0.00003000	246.19 ∠ 135.669° V	0.05 ∠ -134.331° A
R	3→0	48.19800000	246.19 ∠ 135.669° V	3.60 ∠ 90.492° A
L	2→0	8558.00000000	289.09 ∠ 143.737° V	0.01 ∠ 53.737° A

	WCAP PART		FROM IMPEDANCE	TO IMPEDANCE
L	2→3	2.40000000	49.14 + j 64.478	49.14 + j 48.494
R	1→2	1.00000000	50.03 + j 64.447	49.03 + j 64.447
C	3→0	0.00003000	0.00 - j 5004.872	0.00 + j 0.000
R	3→0	48.19800000	48.20 + j 48.497	0.00 + j 0.000
L	2→0	8558.00000000	0.00 + j 56997.790	0.00 + j 0.000

	WCAP PART	VSWR

WCAP INPUT DATA:

1.0600 0.00001000 1

L	2.40000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	3.57000000	0	1	91.00000000
C	0.00003000	3	0	
R	48.19800000	3	0	48.49700000
L	8558.00000000	2	0	0.00000000

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

Using Expert MININEC Broadcast Professional, Version 14.5, the WLNO 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 1060 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. WLNO uses towers of identical, uniform cross-section, triangular towers having sides of 25.0 inches.

TOWER	Physical Height (deg)	Modeled Height (deg)	Modeled % of Height	Modeled Radius (m)	%Equivalent Radius
1	90	99.9	111.0	0.35	127.3
2	90	99.9	111.0	0.35	127.3
3	90	98.8	109.8	0.35	127.3
4	90	99.1	110.1	0.35	127.3
5	90	99.4	110.4	0.35	127.3
6	90	99.0	110.0	0.35	127.3
7	90	97.45	108.3	0.35	127.3

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
3	21	0	-5,000.	0	0	0
4	31	0	-5,000.	0	0	0
5	41	0	-5,000.	0	0	0
6	51	0	-5,000.	0	0	0
7	61	0	-5,000.	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							
1.06	62.618	69.335	93.425	47.9	3.2816	-5.4674	-1.4506

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
2	11	0	0	0	0	0
3	21	0	-5,000.	0	0	0
4	31	0	-5,000.	0	0	0
5	41	0	-5,000.	0	0	0
6	51	0	-5,000.	0	0	0
7	61	0	-5,000.	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							
1.06	62.258	68.892	92.856	47.9	3.2668	-5.4938	-1.4402

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
2	11	0	-5,000.	0	0	0
3	21	0	0	0	0	0
4	31	0	-5,000.	0	0	0
5	41	0	-5,000.	0	0	0
6	51	0	-5,000.	0	0	0
7	61	0	-5,000.	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							
1.06	57.907	64.935	87.005	48.3	3.1616	-5.6897	-1.3656

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
2	11	0	-5,000.	0	0	0
3	21	0	-5,000.	0	0	0
4	31	0	0	0	0	0
5	41	0	-5,000.	0	0	0
6	51	0	-5,000.	0	0	0
7	61	0	-5,000.	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							
1.06	60.001	64.297	87.944	47.	3.0874	-5.8367	-1.3124

Tower 5 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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
2	11	0	-5,000.	0	0	0
3	21	0	-5,000.	0	0	0
4	31	0	-5,000.	0	0	0
5	41	0	0	0	0	0
6	51	0	-5,000.	0	0	0
7	61	0	-5,000.	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							
1.06	61.094	65.518	89.583	47.	3.1256	-5.7601	-1.3398

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
2	11	0	-5,000.	0	0	0
3	21	0	-5,000.	0	0	0
4	31	0	-5,000.	0	0	0
5	41	0	-5,000.	0	0	0
6	51	0	0	0	0	0
7	61	0	-5,000.	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							
1.06	61.773	64.899	89.598	46.4	3.0843	-5.8431	-1.3102

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

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	-5,000.	0	0	0
2	11	0	-5,000.	0	0	0
3	21	0	-5,000.	0	0	0
4	31	0	-5,000.	0	0	0
5	41	0	-5,000.	0	0	0
6	51	0	-5,000.	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							
1.06	53.896	59.355	80.173	47.8	2.9771	-6.0708	-1.2328

WLNO - Details of Model for DA-DAY - Exhibit 5 (Amended)

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 located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern.

Towers 1, 2, 4, 5 and 6 of the array, which are not used by the daytime pattern, were detuned by terminating each of these towers with load reactances of +j444 ohms at node 1, +j454 ohms at node 11, +j442 ohms at node 31, +j445 ohms at node 41, +j450 ohms at node 51, in the tabulation. These values are the opposite sign reactance of the method of moments modeled operating impedance for the directional antenna with a field ratios of 0.0 specified for Towers 1, 2, 4, 5 and 6.

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

WLNO Full Daytime Model

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.06 MHz

tower	field ratio magnitude	phase (deg)
1	1.E-05	0
2	1.E-05	0
3	1.	95.
4	1.E-05	0
5	1.E-05	0
6	1.E-05	0
7	1.	0

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	77.0922	181.8	.173814	271.2
11	161.787	355.6	.356147	85.7
21	1,314.26	162.1	21.363	98.1
31	169.897	86.4	.384426	175.2
41	482.416	211.8	1.0838	300.7
51	803.984	248.9	1.7887	337.9
61	2,299.77	47.7	20.8849	9.3

Sum of square of source currents = 1,794.47
Total power = 50,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00687857	-.0083930S
Y(1, 2)	.000865087	-.00197091
Y(1, 3)	5.4565E-05	.00181261
Y(1, 4)	-.00242818	-.0020514
Y(1, 5)	-.000655861	.00074108
Y(1, 6)	.00162802	.000101205
Y(1, 7)	.00140478	.000776472
Y(2, 1)	.000865089	-.00197091
Y(2, 2)	.00664528	-.00822494
Y(2, 3)	.00108018	-.00178032
Y(2, 4)	-.00226187	-.00257042
Y(2, 5)	-.00291916	-.00176449
Y(2, 6)	-.00162695	.000909108
Y(2, 7)	-.00173166	-7.5881E-05
Y(3, 1)	5.4568E-05	.00181261
Y(3, 2)	.0010802	-.0017803
Y(3, 3)	.00727839	-.00809521
Y(3, 4)	-.00147163	.000974573
Y(3, 5)	-.00214726	-.00308858
Y(3, 6)	-.00128015	-.00208407
Y(3, 7)	.00289013	.000306985
Y(4, 1)	-.00242817	-.00205141
Y(4, 2)	-.00226185	-.00257043
Y(4, 3)	-.00147164	.00097457
Y(4, 4)	.00691772	-.00874089
Y(4, 5)	.00161122	-.00113812
Y(4, 6)	-.000286886	.00208288
Y(4, 7)	-.000707913	.00162981
Y(5, 1)	-.000655865	.000741071

Y(5, 2)	-.00291915	-.00176449
Y(5, 3)	-.00214727	-.00308857
Y(5, 4)	.00161122	-.00113813
Y(5, 5)	.00618451	-.00881295
Y(5, 6)	.000720612	-.00290388
Y(5, 7)	-.000824396	-.00311126
Y(6, 1)	.00162802	.000101199
Y(6, 2)	-.00162695	.000909104
Y(6, 3)	-.00128015	-.00208405
Y(6, 4)	-.00028688	.00208287
Y(6, 5)	.000720625	-.00290387
Y(6, 6)	.00856156	-.0102219
Y(6, 7)	.00312002	-.00370095
Y(7, 1)	.00140477	.000776476
Y(7, 2)	-.00173166	-7.5898E-05
Y(7, 3)	.00289013	.000307079
Y(7, 4)	-.000707923	.00162979
Y(7, 5)	-.000824326	-.00311126
Y(7, 6)	.0031201	-.0037009
Y(7, 7)	.00935004	-.0086293

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	62.479	69.4554
Z(1, 2)	-21.3513	-14.9577
Z(1, 3)	12.7873	7.6898
Z(1, 4)	-16.7919	9.62567
Z(1, 5)	13.1226	6.12848
Z(1, 6)	-7.71143	-5.72663
Z(1, 7)	3.28345	-10.9125
Z(2, 1)	-21.3512	-14.9577
Z(2, 2)	62.1539	69.0494
Z(2, 3)	-20.1249	-14.8984
Z(2, 4)	-16.6082	7.72659
Z(2, 5)	-17.7644	9.2557
Z(2, 6)	12.4739	5.34207
Z(2, 7)	-7.80095	16.9191
Z(3, 1)	12.7873	7.68972
Z(3, 2)	-20.1251	-14.8982
Z(3, 3)	57.9596	64.8506
Z(3, 4)	10.3916	8.10792
Z(3, 5)	-15.3192	7.60753
Z(3, 6)	-15.8642	10.9344
Z(3, 7)	9.70079	-33.6883
Z(4, 1)	-16.7918	9.62575
Z(4, 2)	-16.6082	7.72672
Z(4, 3)	10.3916	8.10793
Z(4, 4)	59.9386	64.4735
Z(4, 5)	-20.2798	-14.519
Z(4, 6)	12.4703	7.92698
Z(4, 7)	11.1625	-2.60471
Z(5, 1)	13.1226	6.12845
Z(5, 2)	-17.7645	9.25574
Z(5, 3)	-15.3191	7.60741
Z(5, 4)	-20.2797	-14.5191
Z(5, 5)	60.9867	65.7443
Z(5, 6)	-20.579	-15.1736
Z(5, 7)	-15.6095	8.74813
Z(6, 1)	-7.71145	-5.72659
Z(6, 2)	12.474	5.34202

Z(6, 3)	-15.8643	10.9344
Z(6, 4)	12.4703	7.92697
Z(6, 5)	-20.579	-15.1735
Z(6, 6)	61.5211	64.9755
Z(6, 7)	-13.87	-20.1585
Z(7, 1)	3.28336	-10.9125
Z(7, 2)	-7.80068	16.9192
Z(7, 3)	9.70002	-33.6884
Z(7, 4)	11.1625	-2.60475
Z(7, 5)	-15.6094	8.74834
Z(7, 6)	-13.8703	-20.1582
Z(7, 7)	54.0473	59.0836

WLNO Full Daytime Model - Amended

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

Sources

source	node	sector	magnitude	phase	type
1	21	1	1,858.64	162.1	voltage
2	61	1	3,252.37	47.7	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	444.	0	0	0
2	11	0	454.	0	0	0
3	31	0	442.	0	0	0
4	41	0	445.	0	0	0
5	51	0	450.	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							
1.06	26.951	55.298	61.516	64.	4.4382	-3.9825	-2.2164
source = 2; node 61, sector 1							
1.06	86.331	68.293	110.08	38.3	3.0594	-5.8944	-1.2923

CURRENT rms
Frequency = 1.06 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	.172514	271.6	4.7E-03	-.17245
2	0	0	9.99	.0965893	271.6	2.74E-03	-.0965504
3	0	0	19.98	.0474276	272.1	1.71E-03	-.0473967
4	0	0	29.97	9.07E-03	277.2	1.14E-03	-9.E-03
5	0	0	39.96	.0201007	87.4	9.08E-04	.0200802
6	0	0	49.95	.0401616	88.7	9.3E-04	.0401509
7	0	0	59.94	.0512252	88.8	1.09E-03	.0512137
8	0	0	69.93	.0532481	88.7	1.25E-03	.0532334
9	0	0	79.92	.0461753	88.4	1.28E-03	.0461576
10	0	0	89.91	.0297273	88.1	9.79E-04	.0297112
END	0	0	99.9	0	0	0	0
GND	161.783	-113.281	0	.354907	85.7	.0266366	.353906
12	161.783	-113.281	9.99	.195718	85.7	.0147116	.195164
13	161.783	-113.281	19.98	.0938145	85.6	7.13E-03	.0935433
14	161.783	-113.281	29.97	.0153726	85.	1.34E-03	.0153139
15	161.783	-113.281	39.96	.0429645	266.1	-2.91E-03	-.0428656
16	161.783	-113.281	49.95	.0822099	266.	-5.73E-03	-.0820099
17	161.783	-113.281	59.94	.102845	266.	-7.17E-03	-.102595
18	161.783	-113.281	69.93	.10532	266.	-7.29E-03	-.105067
19	161.783	-113.281	79.92	.0900933	266.1	-6.18E-03	-.0898813
20	161.783	-113.281	89.91	.0572287	266.1	-3.87E-03	-.0570975
END	161.783	-113.281	99.9	0	0	0	0
GND	323.565	-226.563	0	21.3678	98.1	-3.00458	21.1555
22	323.565	-226.563	9.88	22.2545	96.7	-2.582	22.1042
23	323.565	-226.563	19.76	22.1753	95.8	-2.25057	22.0608
24	323.565	-226.563	29.64	21.3938	95.2	-1.92799	21.3068
25	323.565	-226.563	39.52	19.9644	94.6	-1.60975	19.8994
26	323.565	-226.563	49.4	17.9355	94.2	-1.29846	17.8884
27	323.565	-226.563	59.28	15.3595	93.7	-.999075	15.327
28	323.565	-226.563	69.16	12.2921	93.3	-.717078	12.2712
29	323.565	-226.563	79.04	8.78216	93.	-.457464	8.77023
30	323.565	-226.563	88.92	4.8407	92.6	-.223284	4.83555
END	323.565	-226.563	98.8	0	0	0	0
GND	229.403	146.146	0	.383873	176.3	-.383061	.024958
32	229.403	146.146	9.91	.216353	176.4	-.215919	.0136974
33	229.403	146.146	19.82	.107505	177.	-.107361	5.56E-03
34	229.403	146.146	29.73	.0221879	184.2	-.0221286	-1.62E-03
35	229.403	146.146	39.64	.0436027	349.7	.042896	-7.82E-03
36	229.403	146.146	49.55	.089159	351.8	.0882405	-.0127647
37	229.403	146.146	59.46	.114872	352.	.113743	-.016066
38	229.403	146.146	69.37	.120348	351.8	.119106	-.017244
39	229.403	146.146	79.28	.105134	351.4	.103951	-.0157275
40	229.403	146.146	89.19	.0682049	350.9	.0673505	-.0107623
END	229.403	146.146	99.1	0	0	0	0
GND	389.95	34.8022	0	1.08271	301.7	.56966	-.920737
42	389.95	34.8022	9.94	.606703	301.8	.320103	-.515387
43	389.95	34.8022	19.88	.298705	302.5	.1606	-.251858
44	389.95	34.8022	29.82	.0587306	310.2	.0379131	-.0448539
45	389.95	34.8022	39.76	.125019	115.2	-.0533263	.113075
46	389.95	34.8022	49.7	.250916	117.2	-.11486	.223083
47	389.95	34.8022	59.64	.320637	117.4	-.147629	.284628
48	389.95	34.8022	69.58	.333762	117.2	-.152593	.296837
49	389.95	34.8022	79.52	.289813	116.8	-.130821	.258606

50	389.95	34.8022	89.46	.186854	116.4	-.0829456	.167435
END	389.95	34.8022	99.4	0	0	0	0
GND	551.641	-78.5101	0	1.78542	338.8	1.66497	-.644676
52	551.641	-78.5101	9.9	.994561	338.9	.928014	-.357689
53	551.641	-78.5101	19.8	.484927	339.5	.454312	-.169571
54	551.641	-78.5101	29.7	.0894462	346.9	.0871238	-.0202498
55	551.641	-78.5101	39.6	.211164	153.2	-.188554	.0950673
56	551.641	-78.5101	49.5	.415983	154.9	-.376665	.176538
57	551.641	-78.5101	59.4	.527844	155.	-.478447	.222952
58	551.641	-78.5101	69.3	.546831	154.8	-.494852	.232692
59	551.641	-78.5101	79.2	.472934	154.5	-.42677	.203797
60	551.641	-78.5101	89.1	.30381	154.	-.273147	.133008
END	551.641	-78.5101	99.	0	0	0	0
GND	443.556	-226.588	0	20.8957	9.4	20.6179	3.39622
62	443.556	-226.588	9.745	22.0704	4.9	21.9893	1.88979
63	443.556	-226.588	19.49	22.2237	2.4	22.2044	.924824
64	443.556	-226.588	29.235	21.6395	.5	21.6387	.17781
65	443.556	-226.588	38.98	20.3627	358.9	20.3591	-.382643
66	443.556	-226.588	48.725	18.434	357.6	18.4181	-.765134
67	443.556	-226.588	58.47	15.9	356.5	15.8702	-.972477
68	443.556	-226.588	68.215	12.8117	355.5	12.772	-1.00665
69	443.556	-226.588	77.96	9.21416	354.6	9.17307	-.869202
70	443.556	-226.588	87.705	5.1131	353.7	5.08263	-.557347
END	443.556	-226.588	97.45	0	0	0	0

WLNO - Details of Model for DA-NIGHT - Exhibit 6 Amended

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 located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern.

Tower 7 of the array, which is not used by the nighttime pattern, was detuned by terminating the tower with a load reactance of +j465 at node 61, in the tabulation. This value is the opposite sign reactance of the mehod of moments modeled operating impedance for the directional antenna with a field ratio of 0.0 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 voltages and currents shown on the tabulations that are not specified as "rms" values are the corresponding peak values.

WLNO Full Nighttime Model Amended

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.06 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	1.97	4.5
3	1.	9.
4	1.	76.
5	1.97	80.5
6	1.	85.
7	1.E-05	0

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	190.371	69.5	3.5775	2.3
11	325.074	69.1	7.18315	6.9
21	61.2371	104.4	3.87698	8.7
31	361.952	139.1	3.30764	82.4
41	614.433	140.9	6.71585	86.3
51	246.565	135.7	3.60418	90.5
61	145.06	283.4	.311611	12.4

Sum of square of source currents = 297.115
Total power = 5,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00687857	-.00839305
Y(1, 2)	.000865087	-.00197091
Y(1, 3)	5.4565E-05	.00181261
Y(1, 4)	-.00242818	-.0020514
Y(1, 5)	-.000655861	.00074108
Y(1, 6)	.00162802	.000101205
Y(1, 7)	.00140478	.000776472
Y(2, 1)	.000865089	-.00197091
Y(2, 2)	.00664528	-.00822494
Y(2, 3)	.00108018	-.00178032
Y(2, 4)	-.00226187	-.00257042
Y(2, 5)	-.00291916	-.00176449
Y(2, 6)	-.00162695	.000909108
Y(2, 7)	-.00173166	-7.5881E-05
Y(3, 1)	5.4568E-05	.00181261
Y(3, 2)	.0010802	-.0017803
Y(3, 3)	.00727839	-.00809521
Y(3, 4)	-.00147163	.000974573
Y(3, 5)	-.00214726	-.00308858
Y(3, 6)	-.00128015	-.00208407
Y(3, 7)	.00289013	.000306985
Y(4, 1)	-.00242817	-.00205141
Y(4, 2)	-.00226185	-.00257043
Y(4, 3)	-.00147164	.00097457
Y(4, 4)	.00691772	-.00874089
Y(4, 5)	.00161122	-.00113812
Y(4, 6)	-.000286886	.00208288
Y(4, 7)	-.000707913	.00162981
Y(5, 1)	-.000655865	.000741071

Y(5, 2)	-.00291915	-.0017644 9
Y(5, 3)	-.00214727	-.0030885 7
Y(5, 4)	.00161122	-.0011381 3
Y(5, 5)	.00618451	-.0088129 5
Y(5, 6)	.000720612	-.0029038 8
Y(5, 7)	-.000824396	-.0031112 6
Y(6, 1)	.00162802	.000101199
Y(6, 2)	-.00162695	.000909104
Y(6, 3)	-.00128015	-.0020840 5
Y(6, 4)	-.00028688	.00208287
Y(6, 5)	.000720625	-.0029038 7
Y(6, 6)	.00856156	-.0102219
Y(6, 7)	.00312002	-.0037009 5
Y(7, 1)	.00140477	.000776476
Y(7, 2)	-.00173166	-7.5898E-05
Y(7, 3)	.00289013	.000307079
Y(7, 4)	-.000707923	.00162979
Y(7, 5)	-.000824326	-.0031112 6
Y(7, 6)	.0031201	-.0037009
Y(7, 7)	.00935004	-.0086293

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	62.479	69.4554
Z(1, 2)	-21.3513	-14.9577
Z(1, 3)	12.7873	7.6898
Z(1, 4)	-16.7919	9.62567
Z(1, 5)	13.1226	6.12848
Z(1, 6)	-7.71143	-5.72663
Z(1, 7)	3.28345	-10.9125
Z(2, 1)	-21.3512	-14.9577
Z(2, 2)	62.1539	69.0494
Z(2, 3)	-20.1249	-14.8984
Z(2, 4)	-16.6082	7.72659
Z(2, 5)	-17.7644	9.2557
Z(2, 6)	12.4739	5.34207
Z(2, 7)	-7.80095	16.9191
Z(3, 1)	12.7873	7.68972
Z(3, 2)	-20.1251	-14.8982
Z(3, 3)	57.9596	64.8506
Z(3, 4)	10.3916	8.10792
Z(3, 5)	-15.3192	7.60753
Z(3, 6)	-15.8642	10.9344
Z(3, 7)	9.70079	-33.6883
Z(4, 1)	-16.7918	9.62575
Z(4, 2)	-16.6082	7.72672
Z(4, 3)	10.3916	8.10793
Z(4, 4)	59.9386	64.4735
Z(4, 5)	-20.2798	-14.519
Z(4, 6)	12.4703	7.92698
Z(4, 7)	11.1625	-2.60471
Z(5, 1)	13.1226	6.12845
Z(5, 2)	-17.7645	9.25574
Z(5, 3)	-15.3191	7.60741
Z(5, 4)	-20.2797	-14.5191
Z(5, 5)	60.9867	65.7443
Z(5, 6)	-20.579	-15.1736
Z(5, 7)	-15.6095	8.74813
Z(6, 1)	-7.71145	-5.72659
Z(6, 2)	12.474	5.34202

Z(6, 3)	-15.8643	10.9344
Z(6, 4)	12.4703	7.92697
Z(6, 5)	-20.579	-15.1735
Z(6, 6)	61.5211	64.9755
Z(6, 7)	-13.87	-20.1585
Z(7, 1)	3.28336	-10.9125
Z(7, 2)	-7.80068	16.9192
Z(7, 3)	9.70002	-33.6884
Z(7, 4)	11.1625	-2.60475
Z(7, 5)	-15.6094	8.74834
Z(7, 6)	-13.8703	-20.1582
Z(7, 7)	54.0473	59.0836

WLNO Full Nighttime Amended

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	99.9		
2	none	197.5	35.	0	.35	10
		197.5	35.	99.9		
3	none	395.	35.	0	.35	10
		395.	35.	98.8		
4	none	272.	327.5	0	.35	10
		272.	327.5	99.1		
5	none	391.5	354.9	0	.35	10
		391.5	354.9	99.4		
6	none	557.2	8.1	0	.35	10
		557.2	8.1	99.		
7	none	498.08	27.06	0	.35	10
		498.08	27.06	97.45		

Number of wires = 7
current nodes = 70

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	9.745	1	9.99
radius	1	.35	1	.35

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.06	0	1	.0270694	.02775

Sources

source	node	sector	magnitude	phase	type
1	1	1	269.226	69.5	voltage
2	11	1	459.724	69.1	voltage
3	21	1	86.6023	104.4	voltage
4	31	1	511.877	139.1	voltage
5	41	1	868.939	140.9	voltage
6	51	1	348.695	135.7	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	61	0	465.	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							
1.06	20.656	49.065	53.236	67.2	4.9631	-3.5487	-2.5313
source = 2; node 11, sector 1							
1.06	21.067	40.047	45.25	62.3	4.0716	-4.3556	-1.9847

source = 3; node 21, sector 1

1.06	-1.5836	15.719	15.799	95.8	****	****	****

source = 4; node 31, sector 1

1.06	60.118	91.47	109.46	56.7	4.6001	-3.8376	-2.3156

source = 5; node 41, sector 1

1.06	52.922	74.615	91.477	54.7	3.8473	-4.6214	-1.8378

source = 6; node 51, sector 1

1.06	48.198	48.497	68.374	45.2	2.5914	-7.0697	-.94933

CURRENT rms
Frequency = 1.06 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	3.57624	2.3	3.57329	.145445
2	0	0	9.99	3.70414	1.2	3.70329	.07966
3	0	0	19.98	3.67882	.6	3.67862	.0377444
4	0	0	29.97	3.53995	.1	3.53994	5.68E-03
5	0	0	39.96	3.29622	359.7	3.29617	-.0179719
6	0	0	49.95	2.95558	359.3	2.95539	-.0336803
7	0	0	59.94	2.5267	359.1	2.52636	-.041723
8	0	0	69.93	2.01884	358.8	2.01839	-.042381
9	0	0	79.92	1.44009	358.6	1.43964	-.0359615
10	0	0	89.91	.792434	358.4	.79211	-.0226441
END	0	0	99.9	0	0	0	0
GND	161.783	-113.281	0	7.18436	6.8	7.13312	.856539
12	161.783	-113.281	9.99	7.3786	5.7	7.34187	.735304
13	161.783	-113.281	19.98	7.29065	5.1	7.26232	.642102
14	161.783	-113.281	29.97	6.98649	4.5	6.96457	.552964
15	161.783	-113.281	39.96	6.4824	4.1	6.46562	.46607
16	161.783	-113.281	49.95	5.79399	3.8	5.78142	.381466
17	161.783	-113.281	59.94	4.93865	3.5	4.92955	.299705
18	161.783	-113.281	69.93	3.93492	3.2	3.92869	.221362
19	161.783	-113.281	79.92	2.79925	3.	2.7954	.146734
20	161.783	-113.281	89.91	1.53614	2.8	1.53429	.0753676
END	161.783	-113.281	99.9	0	0	0	0
GND	323.565	-226.563	0	3.87636	8.6	3.83229	.58282
22	323.565	-226.563	9.88	3.88947	8.7	3.8443	.591051
23	323.565	-226.563	19.76	3.78883	8.8	3.74408	.580587
24	323.565	-226.563	29.64	3.59045	8.9	3.5473	.554946
25	323.565	-226.563	39.52	3.30087	9.	3.26045	.514967
26	323.565	-226.563	49.4	2.92746	9.1	2.89086	.461436
27	323.565	-226.563	59.28	2.47871	9.2	2.447	.395197
28	323.565	-226.563	69.16	1.96361	9.3	1.93784	.317087
29	323.565	-226.563	79.04	1.38996	9.4	1.37118	.227675
30	323.565	-226.563	88.92	.759557	9.6	.74896	.126438
END	323.565	-226.563	98.8	0	0	0	0
GND	229.403	146.146	0	3.30699	82.4	.436528	3.27806
32	229.403	146.146	9.91	3.56338	79.3	.658926	3.50193
33	229.403	146.146	19.82	3.62404	77.6	.776496	3.53987
34	229.403	146.146	29.73	3.55296	76.3	.839475	3.45236
35	229.403	146.146	39.64	3.36033	75.3	.853654	3.2501
36	229.403	146.146	49.55	3.05409	74.4	.82169	2.94147
37	229.403	146.146	59.46	2.64258	73.6	.745615	2.53521
38	229.403	146.146	69.37	2.13476	72.9	.627447	2.04047

39	229.403	146.146	79.28	1.53849	72.3	.468847	1.46531
40	229.403	146.146	89.19	.855025	71.6	.269345	.811493
END	229.403	146.146	99.1	0	0	0	0
GND	389.95	34.8022	0	6.7172	86.2	.439664	6.7028
42	389.95	34.8022	9.94	7.12789	83.5	.806925	7.08206
43	389.95	34.8022	19.88	7.1847	81.9	1.00826	7.1136
44	389.95	34.8022	29.82	6.99503	80.7	1.12574	6.90385
45	389.95	34.8022	39.76	6.57757	79.8	1.16868	6.47292
46	389.95	34.8022	49.7	5.94798	78.9	1.1412	5.83747
47	389.95	34.8022	59.64	5.12314	78.2	1.04642	5.01513
48	389.95	34.8022	69.58	4.12115	77.6	.88747	4.02446
49	389.95	34.8022	79.52	2.95809	77.	.667043	2.8819
50	389.95	34.8022	89.46	1.6374	76.4	.384886	1.59153
END	389.95	34.8022	99.4	0	0	0	0
GND	551.641	-78.5101	0	3.60637	90.5	-.0329204	3.60622
52	551.641	-78.5101	9.9	3.73529	88.	.132473	3.73294
53	551.641	-78.5101	19.8	3.71217	86.5	.229442	3.70508
54	551.641	-78.5101	29.7	3.57504	85.3	.29427	3.56291
55	551.641	-78.5101	39.6	3.33191	84.3	.330817	3.31544
56	551.641	-78.5101	49.5	2.99032	83.5	.340538	2.97086
57	551.641	-78.5101	59.4	2.55875	82.7	.324372	2.53811
58	551.641	-78.5101	69.3	2.0463	82.	.283227	2.0266
59	551.641	-78.5101	79.2	1.46103	81.4	.217896	1.44469
60	551.641	-78.5101	89.1	.804783	80.8	.128197	.794507
END	551.641	-78.5101	99.	0	0	0	0
GND	443.556	-226.588	0	.311276	13.3	.302971	.0714224
62	443.556	-226.588	9.745	.170732	13.4	.166116	.0394346
63	443.556	-226.588	19.49	.0814095	14.	.0789939	.0196842
64	443.556	-226.588	29.235	.0131243	22.9	.0120894	5.11E-03
65	443.556	-226.588	38.98	.0379279	187.8	-.0375744	-5.17E-03
66	443.556	-226.588	48.725	.0718781	189.3	-.0709373	-.0115912
67	443.556	-226.588	58.47	.0896324	189.3	-.0884429	-.0145542
68	443.556	-226.588	68.215	.0916298	189.1	-.0904788	-.0144778
69	443.556	-226.588	77.96	.07831	188.7	-.0774113	-.0118296
70	443.556	-226.588	87.705	.0497416	188.2	-.0492355	-7.08E-03
END	443.556	-226.588	97.45	0	0	0	0

WLNO - 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 450 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 450 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 1060 kHz (Degrees)	1060 kHz Measured Z with TCT-1 Connected (Ohms)
1	.721357	1.204400	396.0	50.7 +j 0.06
2	.721727	1.203890	396.2	51.2 -j 0.02
3	.721357	1.204400	396.0	51.3 -j 0.39
4	.721430	1.205930	395.5	51.8 +j 0.51
5	.721090	1.205080	395.8	52.0 -j 1.04
6	.721090	1.205250	395.8	50.9 +j 0.57
7	.721120	1.205420	395.7	51.3 +j 0.18

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	1.3248	7.45 +j48.37	1.0840	6.39 -j49.26	49.31
2	1.3243	7.71 +j49.08	1.0835	6.34 -j49.04	49.56
3	1.3248	8.06 +j49.69	1.0839	6.42 -j49.10	49.93
4	1.3265	8.20 +j49.96	1.0853	6.75 -j50.08	50.58
5	1.3256	8.16 +j49.71	1.0846	6.66 -j49.48	50.15
6	1.3258	7.73 +j48.87	1.0847	6.99 -j51.47	50.79
7	1.3259	7.71 +j49.33	1.0849	6.45 -j49.80	50.07

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, 1060 kHz:

Tower	Ratio	Phase (deg)	TCT Model #	TCT Serial #
1	Reference	Reference	TCT-1	918
2	0.9988	+0.4460	TCT-1	1422
3	1.0004	+0.5000	TCT-1	917
4	1.0018	+0.3180	TCT-1	427
5	0.9894	+0.6800	TCT-1	919
6	0.9975	+0.5480	TCT-1	921
7	1.0000	+0.1180	TCT-1	422

TCT-1 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 1.24% and 0.680 degree, and as such provide far more accurate relative indications than could be the case within the manufacturer's rated accuracy.

WLNO - Reference Field Strength Measurements - Exhibit 8

Reference field strength measurements were made using a Potomac Instruments FIM-4100 meter, the meter being factory calibrated July 27, 2009. 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.

WLNO, 1060 kHz.

Daytime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
0.0	1	2.10	1200.0	29-55-02.6	89-59-51.1	SE corner pf LaCour Monique & Rue Nicole
	2	5.54	425.0	29-55-46.3	89-59-52.0	SW corner of Gen. Meyer Dr. & Danbury Dr.
	3	8.44	250.0	29-57-20.1	89-59-51.7	On St. Bernard Hwy at West Building Materials (closed)
132	1	2.06	65.0	29-52-03.9	89-58-54.4	On Main St. 20 paces south of pole guy, west side of road.
	2	3.32	25.0	29-51-38.7	89-58-15.8	English Turn Rd. directly across from substation, 20 paces south
	3	4.23	29.0	29-51-15.9	89-57-53.3	On LA 39, no landmarks
225	1	2.73	35.0	29-51-46.5	90-01-04.9	On Engineers Rd, across from smaller Versabar Bldg
	2	5.51	30.0	29-50-42.4	90-02-17.4	At end of Horseshoe Rd East, at end of pavement
	3	7.29	20.0	29-50-00.5	90-03-03.0	end of Gunther Lane, at fire hydrant

WLNO, 1060 kHz.

Nighttime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
35.0	1	1.90	20.0	29-53-52.1	89-58-58.6	At fire hydrant F. Edward Hebert Blvd
	2	5.17	8.00	29-55-02.0	89-57-56.0	Atop levee at corner of Oliver & Rankin
	3	7.00	3.00	29-55-54.5	89-57-24.2	On sidewalk - middle of sand color brick building
69.5	1	8.16	3.20	29-54-20.1	89-55-05.6	At property line between 11751 and 11777
	2	9.46	0.85	29-54-35.9	89-54-20.7	At 1st turn-in past Franckle Pl. 30 paces SE of concrete slab
	3	11.2	1.50	29-54-56.7	89-53.20.8	At deadend of Florida Av & Acorn Dr. next to Dead End sign
132	1	2.06	50.0	29-52-03.9	89-58-54.4	On Main St. 20 paces south of pole guy,west side of street
	2	3.32	20.0	29-51-38.7	89-58-15.8	English Turn directly across from substation 20 paces south
	3	4.23	16.0	29-51-15.9	89-57-53.3	On LA-39, no landmarks
190	1	1.90	14.0	29-51-46.8	90-00-05.1	I (eye) Street & Good News Ave, SE corner
	2	6.19	3.80	29-49-30.3	90-00-32.3	Upsilon & Omega at driveway of 501
	3	8.56	3.00	29-48-14.6	90-00-46.8	Sewer Plant Road at pipeline sign across from green mailbox
215	1	1.33	35.0	29-51-54.0	90-00-33.1	Theta Drive at Epsilon at stop sign
	2	2.00	15.0	29-51-50.8	90-00-49.1	Rho Street, walk to middle of culvert, past chain gate
	3	2.70	12.0	29-52-13.2	90-00-21.2	At last paved parking slot toward driving range
253	1	2.96	20.0	29-52-21.6	90-01-37.0	On Bannerwood at SE corner of school yard at Telco box "B"
	2	4.07	19.0	29-52-08.0	90-02-15.7	Lawrence and Bellemeade Blvd at fire hydrant
	3	5.30	8.00	29-51-59.0	90-03-00.7	Corner of Cerritas Via & LaQuinta at stop sign

WLNO, 1060 kHz.

Nighttime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
305	1	3.09	490	29-53-46.9	90-01-22.8	768 Oakwood Dr. at driveway
	2	5.41	160	29-54-29.2	90-02-34.6	Whitney Ave even with door at 1037
	3	7.75	150	29-55-13.5	90-03-45.2	First Street & Amelia Street, river side even with str. sign
356	1	4.20	15.0	29-55-02.6	89-59-58.8	Lacour Monique & Rue Mignon at light post
	2	6.06	5.50	29-56-02.6	90-00-01.8	Ellen Park Place & Patterson, 10paces toward river from Str sign
	3	8.60	4.80	29-57-24.8	90-00-07.7	Even with door of 7005 St. Claude Ave

WLNO - Direct Measurement of Power - Exhibit 9

Measurement of the Common Point Impedance for each pattern was made with a Hewlett-Packard 8753-C Vector Network Analyzer and a Tunwall Radio Directional Coupler. The analyzer was connected at the node directly adjacent to the 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 = 50.0 Ohms, X= -j 10.0 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.

WLNO - Antenna Monitor and Sample System - Exhibit 10

WLNO 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, 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 facilitate connection to the antenna monitor in the equipment rack.

WLNO - Radio Frequency Radiation Considerations - Exhibit 11

Operation of WLNO 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 Tower 3 or operation is ceased, in accordance with the WLNO RFR Plan.

WLNO - Statement of As Built Array Geometry - Exhibit 12

WLNO is an existing licensed facility. WLNO (formerly WNOE-AM) was constructed at the present location in 1949 and licensed in 1950. The station has operated continuously from this site with these tower locations since original construction. The instant application relies on the same theoretical field parameters and array geometry. The last Full Proof of Performance was filed in 1981.

WLNO is exempted from the requirement to submit a surveyor's certification, per FCC Public Notice DA 09-2340, dated October 29, 2009.