

Federal Communications Commission
Washington, D. C. 20554

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

FOR
FCC
USE
ONLY

DEC - 2 2014

Federal Communications Commission
Office of the Secretary

FCC 302-AM
APPLICATION FOR AM
BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY

FILE NO. *Bmmk-20141202 ACO*

12-5-14

SECTION I - APPLICANT FEE INFORMATION

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

SALEM MEDIA GROUP, LLC

MAILING ADDRESS (Line 1) (Maximum 35 characters)

4880 SANTA ROSA ROAD

MAILING ADDRESS (Line 2) (Maximum 35 characters)

SUITE 300

CITY

CAMARILLO

STATE OR COUNTRY (if foreign address)

CA

ZIP CODE

93012

TELEPHONE NUMBER (include area code)

805-987-0400

CALL LETTERS

WYLL

OTHER FCC IDENTIFIER (if applicable)

28630

2. A. Is a fee submitted with this application?

Yes No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section

Governmental Entity Noncommercial educational licensee Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A)	(B)	(C)	
FEE TYPE CODE	FEE MULTIPLE	FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M M R	0 0 0 1	\$ 690.00	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	
FEE TYPE CODE	FEE MULTIPLE	FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M O R	0 0 0 1	\$ 790.00	

ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.

TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
\$ 1,480.00	

11 9 V 4 - 330 1107

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT SALEM MEDIA GROUP, LLC		
MAILING ADDRESS 4880 SANTA ROSA ROAD, SUITE 300		
CITY CAMARILLO	STATE CA	ZIP CODE 93012

2. This application is for:

- Commercial Noncommercial
 AM Directional AM Non-Directional

Call letters WYLL	Community of License CHICAGO	Construction Permit File No. N/A	Modification of Construction Permit File No(s). N/A	Expiration Date of Last Construction Permit N/A
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3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

Yes No

If No, explain in an Exhibit.

N/A

Exhibit No.
N/A

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

Yes No

If No, state exceptions in an Exhibit.

N/A

Exhibit No.
N/A

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect?

Yes No

If Yes, explain in an Exhibit.

N/A

Exhibit No.
N/A

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

Yes No

If No, explain in an Exhibit.

N/A

Does not apply

Exhibit No.
N/A

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

Yes No

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

Exhibit No.
N/A

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

Yes No

If Yes, provide particulars as an Exhibit.

Exhibit No.
N/A

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

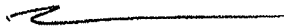
The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

Yes No

2. I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name CHRISTOPHER J. HENDERSON	Signature 	
Title SENIOR VICE PRESIDENT AND SECRETARY	Date 12-1-2014	Telephone Number 805-987-0400

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.



**ENGINEERING EXHIBIT
IN SUPPORT OF AN
APPLICATION FOR STATION LICENSE
NIGHTTIME TRANSMITTER SITE
STATION WYLL – CHICAGO, ILLINOIS
1160 kHz - 50 kW, U, DA-2
FACILITY ID: 28630**

Applicant: Salem Media Group, LLC

NOVEMBER, 2014

7901 Yarnwood Court
Springfield, VA 22153-2899



tel: (703) 569-7704
fax: (703) 569-6417



email: info@ctjc.com
www.ctjc.com

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SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
Salem Media Group, LLC

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

- Station License **BMML-** Direct Measurement of Power

1. Facilities authorized in construction permit					
Call Sign WYLL	File No. of Construction Permit (if applicable) N/A	Frequency (kHz) 1160	Hours of Operation Unlimited	Power in kilowatts	
				Night 50	Day 50

2. Station location	
State Illinois	City or Town Chicago

3. Transmitter location			
State IL	County Will	City or Town Lockport	Street address (or other identification) 17540 Salem Boulevard

4. Main studio location			
State IL	County Cook	City or Town Elk Grove Village	Street address (or other identification) 25 Northwest Point

5. Remote control point location (specify only if authorized directional antenna)			
State IL	County Cook	City or Town Elk Grove Village	Street address (or other identification) 25 Northwest Point

6. Has type-approved stereo generating equipment been installed? Yes No
7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? Yes No
- Not Applicable

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

Exhibit No. Eng. Statement

8. Operating constants:	
RF common point or antenna current (in amperes) without modulation for night system 32.45	RF common point or antenna current (in amperes) without modulation for day system N/A

Measured antenna or common point resistance (in ohms) at operating frequency Night 50 Day N/A	Measured antenna or common point reactance (in ohms) at operating frequency Night -j11 Day N/A
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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	-126.0	N/A	0.632	N/A	----	----
2	0.0	N/A	1.000	N/A	----	----
3	129.4	N/A	0.527	N/A	----	----
4	-144.1	N/A	0.401	N/A	----	----
5	-15.4	N/A	0.876	N/A	----	----
6	+122.5	N/A	0.646	N/A	----	----

Manufacturer and type of antenna monitor: **Potomac Instruments, Model 1901-6, Serial Number 604**

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

Type Radiator self supporting, tapered, steel, base insulated	Overall height in meters of radiator above base insulator, or above base, if grounded. 59.4	Overall height in meters above ground (without obstruction lighting) 60.7	Overall height in meters above ground (include obstruction lighting) 60.7	If antenna is either top loaded or sectionalized, describe fully in an Exhibit. <div style="border: 1px solid black; padding: 2px; display: inline-block;">Exhibit No. N/A</div>
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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	41 ° 34 ' 23 "	West Longitude	87 ° 59 ' 37 "
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If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits.

Exhibit No.
N/A

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system.

Exhibit No.
N/A


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

N/A

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

N/A

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) James D. Sadler	Signature (check appropriate box below) 
Address (include ZIP Code) Carl T. Jones Corporation 7901 Yarnwood Court Springfield, VA 22153	Date November 25, 2014 Telephone No. (Include Area Code) (703) 569-7704

- | | |
|---|---|
| <input type="checkbox"/> Technical Director | <input type="checkbox"/> Registered Professional Engineer |
| <input type="checkbox"/> Chief Operator | <input checked="" type="checkbox"/> Technical Consultant |
| <input type="checkbox"/> Other (specify) | |



**ENGINEERING STATEMENT OF JAMES D. SADLER
IN SUPPORT OF AN
APPLICATION FOR STATION LICENSE
NIGHTTIME TRANSMITTER SITE
STATION WYLL – CHICAGO, ILLINOIS
1160 kHz - 50 kW, U, DA-2
FACILITY ID: 28630**

Applicant: Salem Media Group, LLC

I am a Technical Consultant, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia. My education and experience are a matter of record with the Federal Communications Commission.

1.0 GENERAL

This office has been authorized by Salem Media Group, LLC (“Salem Media”), licensee of AM Station WYLL, to prepare this engineering statement and the associated figures and appendices in support of an Application for License. Station WYLL is licensed for operation on 1160 kilohertz at a power of 50 kilowatts during both daytime and nighttime hours using a different directional pattern and different transmitter sites for daytime and nighttime operation (DA-2). Computer modeling and sample system verification techniques, as described in Section 47 CFR 73.151(c) of the Commission’s Rules and Regulations, were employed to verify performance of the WYLL nighttime directional antenna system. The specific measurement and modeling techniques used in performing the proof of performance on the WYLL directional pattern are described in

detail in this engineering statement. Impedance measurement data, sample system verification measurement data and model derived operating parameters are tabulated in the figures attached to this engineering statement. Finally, all pertinent computer model input and output files are contained in the attached Appendices A, and B.

2.0 IMPEDANCE MEASUREMENTS, COMPUTER MODELING AND SAMPLE SYSTEM VERIFICATION

The proof of performance contained herein is based on the computer modeling and sample system verification procedures described in Section 47 CFR 73.151(c) of the FCC's Rules and Regulations. The WYLL antenna array consists of six identical, vertical, tapered, triangular, self-supporting, steel, series-fed towers. All towers have an electrical height of 82.7 degrees (59.37 meters). The sampling system employs identical toroidal current transformers located at the output of the antenna matching network at the base of each tower.

A detailed description of the impedance and sample system measurements, the computer models employed, and the sample system verification measurements, is contained below.

2.1 INDIVIDUAL TOWER IMPEDANCE MEASUREMENTS

Impedance measurements were performed at the base of each tower, by the undersigned, at the output J-Plug of the antenna matching network. This measurement location corresponds to the input to the tower feed line and the location of the sampling

system toroidal current transformer. The impedance measurements were performed using a Hewlett-Packard Model 4396A network analyzer; an Amplifier Research Model 5W1000 power amplifier; and a Tunwall Radio directional coupler. The impedance of each tower was measured with the other five towers open-circuited at the corresponding J-Plug location. The measured impedances are tabulated in Figure 3.

2.2 INDIVIDUAL TOWER COMPUTER MODELS

A Method of Moments (“MoM”) computer model was developed to model each element in the array using Expert MiniNEC Broadcast Professional (Version 12.5). This version of the software has been found to handle complex tower models better than the newer versions. The WYLL towers are equal height, tapered, wide-based, self-supporting structures with base insulators. Each tower was modeled using multiple wires to represent the legs. Structural drawings of the actual towers were used to faithfully reproduce the geometry of each individual tower in the model. A scale drawing of the wire frame model based on the actual physical height of the structure is shown in Figure 1.

To replicate the individual measured base impedances to within FCC specified tolerances, it was necessary to adjust the physical height of the three towers in the MiniNEC model and, in a separate circuit model, to add a small amount of inductance in series with the model derived base impedance of each tower. Details of the modeled individual tower adjusted heights are contained in Figure 2. The values of the lumped series inductances used in the circuit model are contained in Figure 3. A comparison of

the measured individual tower impedances, the modeled individual tower impedances, and the adjusted modeled (circuit model) individual tower impedances is also contained in Figure 3. The percentage difference between the adjusted modeled tower height and the actual physical tower height and the magnitudes of the lumped series inductances and the shunt capacitances that were used in the circuit models are all within the tolerances set forth in the Rules.

As demonstrated by the data contained in Figure 3, the adjusted modeled individual tower resistance and reactance for each tower is well within ± 2 ohms and ± 4 percent tolerance of the corresponding measured individual tower resistance and reactance. The text files containing all pertinent input and output data associated with the individual tower models are contained in Appendix A.

2.3 DIRECTIONAL ANTENNA COMPUTER MODEL AND ANTENNA MONITOR PARAMETERS

The theoretical nighttime directional field parameters and the licensed tower spacings and orientations were used in combination with the adjusted individual tower models to produce the nighttime directional antenna computer model. From the directional computer model, tower currents were derived for each wire segment of each antenna. Each segment current was multiplied by the segment length and numerically integrated and normalized to the appropriate reference tower to verify that the modeled current moments are essentially identical to the authorized relative directional field parameters.

The new nighttime directional array operating parameters were determined from the modeled base currents and are tabulated in Figure 4. The text files containing all pertinent input and output data associated with the nighttime directional antenna computer model are contained in Appendix B.

2.4 SAMPLE SYSTEM DESCRIPTION AND VERIFICATION MEASUREMENTS

The WYLL nighttime antenna sampling is comprised of: 1) Delta Electronics, Model TCT-1, toroidal current transformers mounted in an identical manner in the output branch of each tower's impedance matching network; 2) equal lengths of Andrew, Type LDF2-50, phase stabilized, 3/8-inch, foam dielectric, coaxial cable between each toroidal current transformer and the transmitter building; 3) two foot jumper cables of Pasternack Enterprises, Type RG8A/U coaxial cable between the LCF12-50J sample cables and the antenna monitor; and 4) a Potomac Instruments, Model 1901-6, antenna monitor. Each sample line between the ATU building and the transmitter building, including excess lengths, is buried below ground level such that each sample line is subjected to the same environmental conditions.

Initial measurement of the sample line lengths revealed differences in electrical length of up to 4 degrees. In order to achieve a maximum length variation of no more than 1 electrical degree, as required by the Rules, short jumpers of Andrew Corporation, Type FSJ1-50A, 1/4-inch, superflex, foam dielectric, coaxial cable were cut and inserted between the ATU end of the existing sample line and the toroidal transformers.

The sample lines, including the RG8A/U and superflex jumper cables, were verified to be equal in length by measuring the open-circuit series resonate frequency closest to the carrier frequency. The characteristic impedance was verified by measuring the impedance at frequencies corresponding to odd multiples of 1/8 wavelength immediately above and below the open circuit series resonant frequency closest to the carrier frequency, while the line was open-circuited at the sample element end of the line. The characteristic impedance was calculated by the following formula:

$$Z = \sqrt{\sqrt{R_1^2 + X_1^2} \times \sqrt{R_2^2 + X_2^2}}$$

where:

Z = Characteristic impedance and

R₁ + j X₁ and R₂ + j X₂ are the measured impedances

at ± 45 degrees offset frequencies.

A tabulation of the measured sample line lengths and the characteristic impedance of each line is contained in Figure 5. All sample line verification measurements were performed by the undersigned using a Hewlett-Packard, Model 4396A, network analyzer; an Amplifier Research, Model 5W1000, power amplifier; and a Tunwall Radio directional coupler. As demonstrated by the measured values in Figure 5, the measured sample line lengths are within 1 electrical degree with respect to each other and the measured characteristic impedances are well within 2 ohms of each other, as required by Section 47 CFR 73.151(c)(2)(I) of the FCC Rules and Regulations.

An impedance measurement was performed at the input to each sample line, at the antenna monitor end of the line, with the toroidal current transformer connected. The measurement was performed at the WYLL operating frequency of 1160 kilohertz. The measured sample line impedances with the current transformers connected are tabulated in Figure 5 under the heading "Reference Impedance Sample Transformer Connected." The performance of the toroidal current transformers was verified by driving a common reference current through all six transformers and comparing the relative outputs as observed on the network analyzer. The test confirmed that the performance of all six of the WYLL current transformers is well within the manufacturer's stated accuracy. A tabulation of the toroidal current transformer measurement data and the serial number of each toroidal current transformer is contained in Figure 6.

The antenna monitor that is employed at the WYLL nighttime transmitter site is a Potomac Instruments, Model 1901-6, Serial Number 604. The performance of the antenna monitor was verified, by the undersigned, to be well within the manufacturer's stated accuracy. The verification was performed by comparison of the measured relative directional operating parameters, as observed on the antenna monitor, with those measured using the network analyzer when the phasing and coupling system common point was driven with the network analyzer swept source through a power amplifier.

3.0 COMMON POINT IMPEDANCE AND COMMON POINT CURRENT

The networks associated with the nighttime directional antenna system were adjusted for proper impedance transformation and the common point impedance matching network was set for $Z = 50 - j 11$ Ohms. The transmitter output power level was adjusted for a common point current of 32.45 amperes.

4.0 REFERENCE FIELD STRENGTH MEASUREMENTS

Reference field strength measurements were performed on the WYLL nighttime directional antenna pattern on the 5° radial bearing, corresponding to the major lobe of the pattern. Additional field strength measurements were performed on the 62°, 123.5°, 154°, 211.5°, 255°, 272°, and 292°, corresponding to the nighttime directional pattern minima. Three reference field strength measurements were performed on each of the selected radial bearings.

The measurements were performed by Mr. Frank McCoy, Chief Engineer of Station WYLL. The meter that was employed to perform the measurements is a Potomac Instruments, Model FIM-41, Serial Number 2073, last calibrated by the manufacturer in November, 2013.

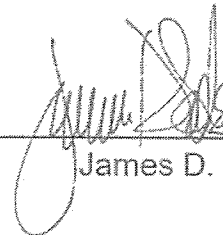
The measured field strength value for each established reference point location is tabulated in Figure 7, Sheets 1 through 4. The tabulations contained in Figure 7 also include for each reference location; GPS coordinates (NAD83), distance from the WYLL array center, and a description of measurement location.

SUMMARY

It is submitted that the WYLL nighttime directional pattern performance has been verified using computer modeling and sample system verification procedures in accordance with Section 47 CFR 73.151(c) of the Commission's Rules and Regulations. It is believed that the nighttime directional antenna system, as adjusted, fully complies with the terms of the station's FCC Authorization and all applicable FCC Rules and Regulations. It is requested that a superseding license be issued to Salem Media reflecting the new MoM model derived operating parameters as contained herein.

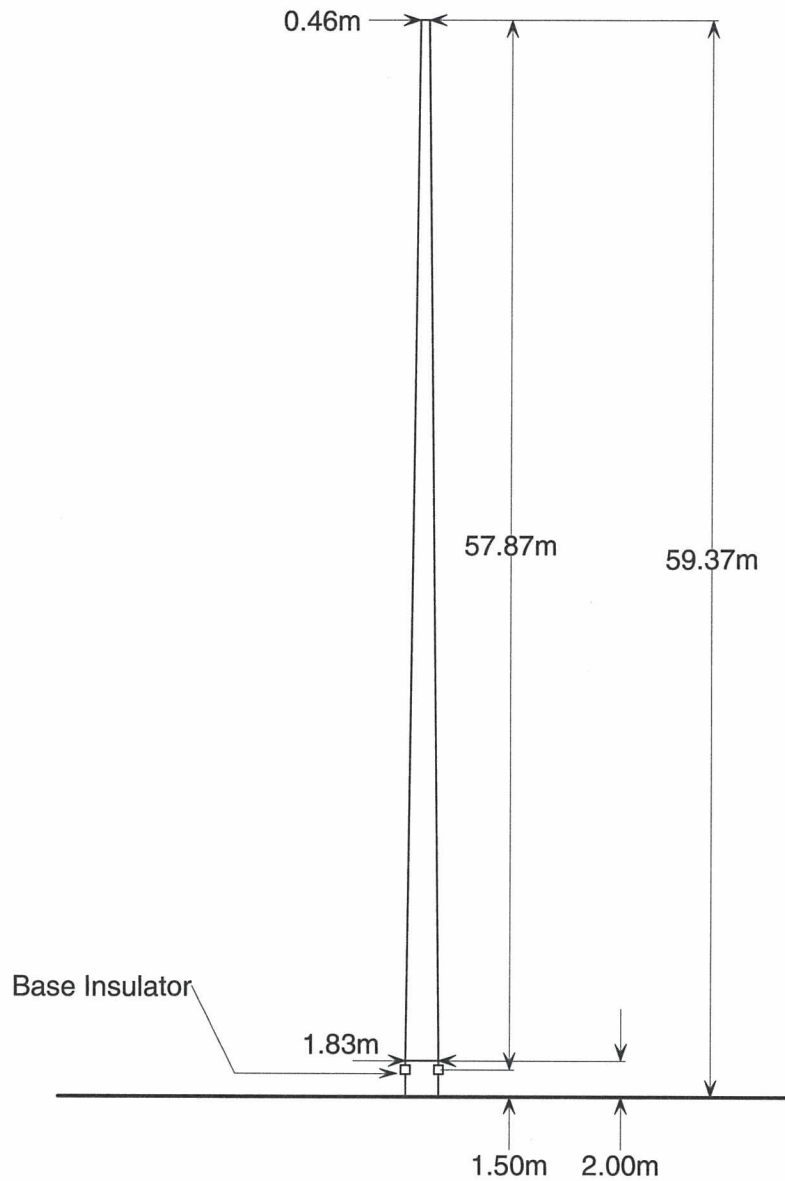
This engineering statement and the attached figures and appendices were prepared by the undersigned or under the direct supervision of the undersigned and are believed to be true and correct.

Dated: November 25, 2014



James D. Sadler

Figure 1



WIREFRAME TOWER MODEL
NIGHTTIME TRANSMITTER SITE
STATION WYLL - CHICAGO, ILLINOIS
1160 kHz - 50 kW, U, DA-2
NOVEMBER, 2014

TOWER MODEL HEIGHT AND RADIUS
 NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 570 kHz - 50 kW, U, DA-2
 NOVEMBER, 2014

Tower	Physical Height (degrees)	Modeled Height (degrees)	Percent of Physical Height	Modeled Radius (meters)	Percent of Equivalent Radius
1	82.7	80.6	97.5	See Note	See Note
2	82.7	80.6	97.5	See Note	See Note
3	82.7	80.6	97.5	See Note	See Note
4	82.7	80.6	97.5	See Note	See Note
5	82.7	80.6	97.5	See Note	See Note
6	82.7	80.6	97.5	See Note	See Note

Note: The complete structure of the wide-based self-supporting towers was modeled using thin wires of a radius typically found in such construction. The actual width of the triangular, tapered tower as determined from structural drawings was used in the model. A scale drawing of the wireframe model based on the actual physical height and width is contained in Figure 1.

MEASURED AND MODELED IMPEDANCES

NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 570 kHz - 50 kW, U, DA-2
 NOVEMBER, 2014

Tower	Measured Tower Base Impedance ¹	Modeled Tower Base Impedance	Shunt Capacitance (pF)	Modeled plus Shunt Reactance	Lumped Series Inductance (uH)	Adjusted Tower Base Impedance
1	30.8 +j 1.5	28.8 -j 20.0	0.0	28.8 -j 20.0	2.9	28.8 +j 1.1
2	29.4 +j 1.2	27.7 -j 20.3	0.0	27.7 -j 20.3	3.0	27.7 +j 1.6
3	30.2 +j 0.1	28.3 -j 20.2	0.0	28.3 -j 20.2	2.8	28.3 +j 0.3
4	31.2 +j 0.2	28.9 -j 19.4	0.0	28.9 -j 19.4	2.7	28.9 +j 0.2
5	28.6 +j 1.8	27.8 -j 20.6	0.0	27.8 -j 20.6	3.1	27.8 +j 2.0
6	29.9 +j 1.3	28.8 -j 21.2	0.0	28.8 -j 21.2	3.1	28.8 +j 1.4

¹ Measured at output of matching network with other towers open-circuited

**ANTENNA MONITOR PARAMETERS
AND COMMON POINT DATA**
NIGHTTIME TRANSMITTER SITE
STATION WYLL - CHICAGO, ILLINOIS
570 kHz - 50 kW, U, DA-2
NOVEMBER, 2014

UNLIMITED		
Tower	Modeled Parameters	
	Ratio	Phase (deg)
1	0.632	-126.0
2	1.000	0.0
3	0.527	129.4
4	0.401	-144.1
5	0.876	-15.4
6	0.646	122.5

Common Point Impedance = 50 -j 11 ohms
Common Point Current = 32.45 amperes
Antenna Input Power = 52,650 Watts

SAMPLE LINE VERIFICATION MEASUREMENTS

NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 1160 kHz - 50 kW-D, 50 kW-N, U, DA-2
 NOVEMBER, 2014

Tower	Open Circuit Series Resonant Frequency ¹ (kHz)	Open Circuit Measured Line Length ² (degrees)	Resonant Frequency -45 degree Offset Frequency (kHz)	Resonant Frequency -45 degree Offset Impedance (Ohms)	Resonant Frequency +45 degree Offset Frequency (kHz)	Resonant Frequency +45 degree Offset Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)	Reference Impedance Sample Toroid Connected ² (Ohms)
1	1216.0	429.3	1094.40	9.46 -j 47.81	1337.60	11.84 +j 47.27	48.73	50.55 -j 1.28
2	1216.4	429.1	1094.76	9.46 -j 47.77	1338.04	11.98 +j 47.44	48.81	50.68 -j 1.36
3	1216.1	429.2	1094.49	9.43 -j 47.78	1337.71	11.82 +j 47.30	48.73	50.27 -j 0.78
4	1216.1	429.2	1094.49	9.39 -j 47.49	1337.71	11.83 +j 47.01	48.44	50.08 -j 1.41
5	1216.1	429.2	1094.49	9.42 -j 47.67	1337.71	11.78 +j 47.16	48.60	50.40 -j 1.07
6	1216.0	429.3	1094.40	9.42 -j 47.71	1337.60	11.95 +j 47.79	48.95	50.88 -j 1.54

¹ At this frequency, the sample line electrical length is equal to 450°.

² At carrier frequency (1160 kHz)

SAMPLE DEVICE VERIFICATION MEASUREMENTS

NIGHTTIME TRANSMITTER SITE
STATION WYLL - CHICAGO, ILLINOIS
570 kHz - 50 kW, U, DA-2
NOVEMBER, 2014

Reference Sample Toroid Number	Measured Sample Toroid Number	Measured	
		Field Ratio	Phase
			(degrees)
1	2	1.001	-0.5
1	3	1.002	-0.5
1	4	1.002	-0.5
1	5	1.001	-0.5
1	6	1.000	-0.3
5	6	1.001	-0.3

Sample Toroid Number	Type	Serial Number
1	Delta Electronics, TCT-1	17174
2	Delta Electronics, TCT-1	17181
3	Delta Electronics, TCT-1	17180
4	Delta Electronics, TCT-1	17183
5	Delta Electronics, TCT-1	17153
6	Delta Electronics, TCT-1	17152

REFERENCE FIELD STRENGTH MEASUREMENTS

NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 1160 kHz - 50 kW, U, DA-2
 NOVEMBER, 2014

5 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	2.86	2200	41° 35' 55.3"	87° 59' 26.0"	The point is located across from driveway to #15308 W 159th Street.
2	6.13	720	41° 37' 40.7"	87° 59' 12.8"	The point is located across from Chicory Trail on 143rd Street.
3	9.90	450	41° 39' 42.4"	87° 58' 59.5"	The point is located at the hydrant on the NW corner of Covington Drive and Keough Street.

62 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	4.21	155	41° 35' 27.3"	87° 56' 56.3"	The point is located across from the driveway for #16400 Parker Road.
2	7.59	140	41° 36' 17.8"	87° 54' 46.8"	The point is located in the driveway to #15630 Twin Lakes Drive.
3	9.60	92	41° 36' 50.0"	87° 53' 31.1"	The point is located in the driveway of pump house across Wolf Road and 300 feet south of Fire Station.

REFERENCE FIELD STRENGTH MEASUREMENTS

NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 1160 kHz - 50 kW, U, DA-2
 NOVEMBER, 2014

123.5 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	2.63	200	41° 33' 36.0"	87° 58' 2.2"	The point is located 1200 feet south of Chicago Bloomington Trail on S Cedar Road.
2	4.88	120	41° 32' 55.8"	87° 56' 41.1"	The point is located 500 feet west of Parker Road on the north shoulder of Southwest Highway.
3	10.40	44	41° 31' 16.4"	87° 53' 23.0"	The point is located in the driveway to #20258 Kluth Drive.

154 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	4.25	140	41° 32' 19.3"	87° 58' 17.2"	The point is located on the northeast corner of Elm Drive and Terry Ellen Lane.
2	5.93	90	41° 31' 30.3"	87° 57' 45.1"	The point is located in the center of the cul-de-sac at the east end of Keithland Court.
3	8.85	52	41° 30' 5.5"	87° 56' 49.9"	The point is located at the curb in front of #768 Lake Road.

REFERENCE FIELD STRENGTH MEASUREMENTS

NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 1160 kHz - 50 kW, U, DA-2
 NOVEMBER, 2014

211.5 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	3.48	72	41° 32' 47.4"	88° 00' 56.4"	The point is located on the southwest corner of Great Meadow Drive and Pine View Drive.
2	6.57	26	41° 31' 21.9"	88° 2' 6.4"	The point is located on the southwest corner of Schorie Avenue and E Washington Street.
3	9.07	8.8	41° 30' 11.3"	88° 2' 58.9"	The point is located across from T intersection of Mills Road (County Highway 51) and Hermans Lane.

255 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	1.77	86	41° 34' 7.7"	88° 00' 51.1"	The point is located on the southeast corner of Bruce Road and Cagwin Drive.
2	6.03	14	41° 33' 31.5"	88° 3' 49.0"	The point is located at the fire hydrant on the west side of Greengarden Place.
3	8.16	11	41° 33' 15.1"	88° 5' 18.2"	The point is located at the hydrant on the southwest corner of Stern Avenue and Broadway Street.

REFERENCE FIELD STRENGTH MEASUREMENTS

NIGHTTIME TRANSMITTER SITE
 STATION WYLL - CHICAGO, ILLINOIS
 1160 kHz - 50 kW, U, DA-2
 NOVEMBER, 2014

272 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	2.49	34	41° 34' 24.6"	88° 1' 24.8"	The point is located on the southeast corner of W Oneida Drive and Broken Arrow Drive.
2	5.71	32	41° 34' 28.8"	88° 3' 44.2"	The point is located in the third parking space south of the utility pole in Dell Park lot (former MP).
3	7.57	25	41° 34' 31.6"	88° 5' 4.7"	The point is located on the east side of Broadway Street at the north end of the guardrail.

292 Degree Radial

Point Number	Distance (km)	Nighttime Field (mV/m)	Geographic Coordinates (NAD83)		Description
			Latitude	Longitude	
1	2.88	117	41° 34' 57.7"	88° 1' 33.0"	The point is located at the fire hydrant on the east side of South Farrell Road 200 feet south of W 167th Street (aka E Division Street).
2	5.63	58	41° 35' 33.3"	88° 3' 22.2"	The point is located on the northwest corner of W 6th Street and S State Street.
3	8.95	28	41° 36' 11.4"	88° 5' 36.5"	The point is located at the intersection of gravel access road and paved road to Lewis University Airport (George J. Michas Drive).

APPENDIX A
INDIVIDUAL TOWER MODELING

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - TOWER #1
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
1.16	28.781	-20.004	35.05	325.2	2.119	-8.9036	-.59842

GEOMETRY - TOWER #1
Dimensions in meters
Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.2		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37 ✓		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37 ✓		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37 ✓		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37 ✓	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2
		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		
53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
<i>Source</i> 66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

Individual wires	minimum		maximum	
	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

ELECTRICAL DESCRIPTION - TOWER #1

Frequencies (MHz)

no.	frequency		no. of steps	segment length (wavelengths)	
	lowest	step		minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

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	374	10,000.	0	0	0	0
3	747	10,000.	0	0	0	0
4	1120	10,000.	0	0	0	0
5	1493	10,000.	0	0	0	0
6	1866	10,000.	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - TOWER #2

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
1.16	27.68	-20.226	34.282	323.8	2.2013	-8.5136	-.65911

GEOMETRY - TOWER #2

Dimensions in meters

Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2
		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		
53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

Individual wires	minimum		maximum	
	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

ELECTRICAL DESCRIPTION - TOWER #2

Frequencies (MHz)

no.	frequency		no. of steps	segment length (wavelengths)	
	lowest	step		minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

Sources

source	node	sector	magnitude	phase	type
1	374	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	10,000.	0	0	0	0
2	374	0	0	0	0	0
3	747	10,000.	0	0	0	0
4	1120	10,000.	0	0	0	0
5	1493	10,000.	0	0	0	0
6	1866	10,000.	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - TOWER #3

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
1.16	28.334	-20.125	34.754	324.6	2.1527	-8.7391	-.62325

GEOMETRY - TOWER #3

Dimensions in meters

Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2
		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		
53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

Individual wires	minimum		maximum	
	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

ELECTRICAL DESCRIPTION - TOWER #3

Frequencies (MHz)

no.	lowest	step	no. of steps	segment length (wavelengths)	
				minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

Sources

source node	sector	magnitude	phase	type
1	747	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	10,000.	0	0	0	0
2	374	10,000.	0	0	0	0
3	747	0	0	0	0	0
4	1120	10,000.	0	0	0	0
5	1493	10,000.	0	0	0	0
6	1866	10,000.	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - TOWER #4

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1120, sector 1							
1.16	28.889	-19.473	34.839	326.	2.0934	-9.0332	-.57959

GEOMETRY - TOWER #4

Dimensions in meters

Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2
		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		
53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

Individual wires	minimum		maximum	
	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

ELECTRICAL DESCRIPTION - TOWER #4

Frequencies (MHz)

no.	frequency		no. of steps	segment length (wavelengths)	
	lowest	step		minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

Sources

source	node	sector	magnitude	phase	type
1	1120	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	10,000.	0	0	0	0
2	374	10,000.	0	0	0	0
3	747	10,000.	0	0	0	0
4	1120	0	0	0	0	0
5	1493	10,000.	0	0	0	0
6	1866	10,000.	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - TOWER #5

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
1.16	27.778	-20.5	34.523	323.6	2.2045	-8.4991	-.6615

GEOMETRY - TOWER #5

Dimensions in meters

Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2
		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		
53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

Individual wires	minimum		maximum	
	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

ELECTRICAL DESCRIPTION - TOWER #5

Frequencies (MHz)

no.	frequency		no. of steps	segment length (wavelengths)	
	lowest	step		minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

Sources

source	node	sector	magnitude	phase	type
1	1493	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	10,000.	0	0	0	0
2	374	10,000.	0	0	0	0
3	747	10,000.	0	0	0	0
4	1120	10,000.	0	0	0	0
5	1493	0	0	0	0	0
6	1866	10,000.	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - TOWER #6

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
1.16	28.712	-21.19	35.685	323.6	2.1669	-8.6719	-.63372

GEOMETRY - TOWER #6

Dimensions in meters

Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2
		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		
53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		

**APPENDIX A – INDIVIDUAL TOWER MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

Individual wires	minimum		maximum	
	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

ELECTRICAL DESCRIPTION - TOWER #6

Frequencies (MHz)

no.	frequency		no. of steps	segment length (wavelengths)	
	lowest	step		minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

Sources

source	node	sector	magnitude	phase	type
1	1866	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	10,000.	0	0	0	0
2	374	10,000.	0	0	0	0
3	747	10,000.	0	0	0	0
4	1120	10,000.	0	0	0	0
5	1493	10,000.	0	0	0	0
6	1866	0	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

APPENDIX B

NIGHTTIME DIRECTIONAL ARRAY MODEL

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

IMPEDANCE - NIGHTTIME OPERATION

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.16	37.84	10.337	39.227	15.3	1.4404	-14.873	-.14376
source = 2; node 374, sector 1							
1.16	16.209	-12.708	20.597	321.9	3.3057	-5.4249	-1.4676
source = 3; node 747, sector 1							
1.16	1.155	-32.336	32.356	272.	61.405	-.28293	-12.002
source = 4; node 1120, sector 1							
1.16	59.382	7.7543	59.887	7.4	1.2497	-19.093	-5.4E-02
source = 5; node 1493, sector 1							
1.16	12.198	-7.6194	14.382	328.	4.2	-4.217	-2.067
source = 6; node 1866, sector 1							
1.16	.44303	-30.088	30.091	270.8	153.73	-.113	-15.903

GEOMETRY - NIGHTTIME OPERATION

Dimensions in meters

Environment: perfect ground

wire	caps	X	Y	Z	radius	segs
1	none	0	0	0	.0254	4
		0	0	2.		
2	none	1.056	0	0	.0254	4
		1.056	0	2.		
3	none	1.056	0	2.	.0254	114
		.264	0	59.37		
4	none	-.528	.914	0	.0254	4
		-.528	.914	2.		
5	none	-.528	.914	2.	.0254	114
		-.132	.229	59.37		
6	none	-.528	-.914	0	.0254	4
		-.528	-.914	2.		
7	none	-.528	-.914	2.	.0254	114
		-.132	-.229	59.37		
8	none	0	0	2.	.0254	2
		1.056	0	2.		
9	none	0	0	2.	.0254	2
		-.528	.914	2.		
10	none	0	0	2.	.0254	2
		-.528	-.914	2.		
11	none	.264	0	59.37	.0254	1
		-.132	.229	59.37		
12	none	-.132	.229	59.37	.0254	1
		-.132	-.229	59.37		
13	none	-.132	-.229	59.37	.0254	1
		.264	0	59.37		
14	none	-70.1	-12.7	0	.0254	4
		-70.1	-12.7	2.		
15	none	-69.044	-12.7	0	.0254	4
		-69.044	-12.7	2.		
16	none	-69.044	-12.7	2.	.0254	114
		-69.836	-12.7	59.37		
17	none	-70.628	-11.786	0	.0254	4
		-70.628	-11.786	2.		
18	none	-70.628	-11.786	2.	.0254	114
		-70.232	-12.471	59.37		
19	none	-70.628	-13.614	0	.0254	4
		-70.628	-13.614	2.		
20	none	-70.628	-13.614	2.	.0254	114
		-70.232	-12.929	59.37		
21	none	-70.1	-12.7	2.	.0254	2

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

		-69.044	-12.7	2.		
22	none	-70.1	-12.7	2.	.0254	2
		-70.628	-11.786	2.		
23	none	-70.1	-12.7	2.	.0254	2
		-70.628	-13.614	2.		
24	none	-69.836	-12.7	59.37	.0254	1
		-70.232	-12.471	59.37		
25	none	-70.232	-12.471	59.37	.0254	1
		-70.232	-12.929	59.37		
26	none	-70.232	-12.929	59.37	.0254	1
		-69.836	-12.7	59.37		
27	none	-131.8	-28.	0	.0254	4
		-131.8	-28.	2.		
28	none	-130.744	-28.	0	.0254	4
		-130.744	-28.	2.		
29	none	-130.744	-28.	2.	.0254	114
		-131.536	-28.	59.37		
30	none	-132.328	-27.086	0	.0254	4
		-132.328	-27.086	2.		
31	none	-132.328	-27.086	2.	.0254	114
		-131.932	-27.771	59.37		
32	none	-132.328	-28.914	0	.0254	4
		-132.328	-28.914	2.		
33	none	-132.328	-28.914	2.	.0254	114
		-131.932	-28.229	59.37		
34	none	-131.8	-28.	2.	.0254	2
		-130.744	-28.	2.		
35	none	-131.8	-28.	2.	.0254	2
		-132.328	-27.086	2.		
36	none	-131.8	-28.	2.	.0254	2
		-132.328	-28.914	2.		
37	none	-131.536	-28.	59.37	.0254	1
		-131.932	-27.771	59.37		
38	none	-131.932	-27.771	59.37	.0254	1
		-131.932	-28.229	59.37		
39	none	-131.932	-28.229	59.37	.0254	1
		-131.536	-28.	59.37		
40	none	8.2	126.1	0	.0254	4
		8.2	126.1	2.		
41	none	9.256	126.1	0	.0254	4
		9.256	126.1	2.		
42	none	9.256	126.1	2.	.0254	114
		8.464	126.1	59.37		
43	none	7.672	127.014	0	.0254	4
		7.672	127.014	2.		
44	none	7.672	127.014	2.	.0254	114
		8.068	126.329	59.37		
45	none	7.672	125.186	0	.0254	4
		7.672	125.186	2.		
46	none	7.672	125.186	2.	.0254	114
		8.068	125.871	59.37		
47	none	8.2	126.1	2.	.0254	2
		9.256	126.1	2.		
48	none	8.2	126.1	2.	.0254	2
		7.672	127.014	2.		
49	none	8.2	126.1	2.	.0254	2
		7.672	125.186	2.		
50	none	8.464	126.1	59.37	.0254	1
		8.068	126.329	59.37		
51	none	8.068	126.329	59.37	.0254	1
		8.068	125.871	59.37		
52	none	8.068	125.871	59.37	.0254	1
		8.464	126.1	59.37		

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

53	none	-75.9	133.6	0	.0254	4
		-75.9	133.6	2.		
54	none	-74.844	133.6	0	.0254	4
		-74.844	133.6	2.		
55	none	-74.844	133.6	2.	.0254	114
		-75.636	133.6	59.37		
56	none	-76.428	134.514	0	.0254	4
		-76.428	134.514	2.		
57	none	-76.428	134.514	2.	.0254	114
		-76.032	133.829	59.37		
58	none	-76.428	132.686	0	.0254	4
		-76.428	132.686	2.		
59	none	-76.428	132.686	2.	.0254	114
		-76.032	133.371	59.37		
60	none	-75.9	133.6	2.	.0254	2
		-74.844	133.6	2.		
61	none	-75.9	133.6	2.	.0254	2
		-76.428	134.514	2.		
62	none	-75.9	133.6	2.	.0254	2
		-76.428	132.686	2.		
63	none	-75.636	133.6	59.37	.0254	1
		-76.032	133.829	59.37		
64	none	-76.032	133.829	59.37	.0254	1
		-76.032	133.371	59.37		
65	none	-76.032	133.371	59.37	.0254	1
		-75.636	133.6	59.37		
66	none	-128.2	121.2	0	.0254	4
		-128.2	121.2	2.		
67	none	-127.144	121.2	0	.0254	4
		-127.144	121.2	2.		
68	none	-127.144	121.2	2.	.0254	114
		-127.936	121.2	59.37		
69	none	-128.728	122.114	0	.0254	4
		-128.728	122.114	2.		
70	none	-128.728	122.114	2.	.0254	114
		-128.332	121.429	59.37		
71	none	-128.728	120.286	0	.0254	4
		-128.728	120.286	2.		
72	none	-128.728	120.286	2.	.0254	114
		-128.332	120.971	59.37		
73	none	-128.2	121.2	2.	.0254	2
		-127.144	121.2	2.		
74	none	-128.2	121.2	2.	.0254	2
		-128.728	122.114	2.		
75	none	-128.2	121.2	2.	.0254	2
		-128.728	120.286	2.		
76	none	-127.936	121.2	59.37	.0254	1
		-128.332	121.429	59.37		
77	none	-128.332	121.429	59.37	.0254	1
		-128.332	120.971	59.37		
78	none	-128.332	120.971	59.37	.0254	1
		-127.936	121.2	59.37		

Number of wires = 78
current nodes = 2238

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	50	.457444	8	.528
segment/radius ratio	50	18.0096	8	20.7874
radius	1	.0254	1	.0254

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

ELECTRICAL DESCRIPTION - NIGHTTIME OPERATION

Frequencies (MHz)

no.	frequency		no. of steps	segment length (wavelengths)	
	lowest	step		minimum	maximum
1	1.16	0	1	1.77E-03	2.04E-03

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,100.98	251.5	voltage
2	374	1	914.368	324.2	voltage
3	747	1	756.776	43.7	voltage
4	1120	1	1,065.05	225.7	voltage
5	1493	1	559.629	314.9	voltage
6	1866	1	862.778	35.6	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	.01	0	0	0	0
2	374	.01	0	0	0	0
3	747	.01	0	0	0	0
4	1120	.01	0	0	0	0
5	1493	.01	0	0	0	0
6	1866	.01	0	0	0	0
7	8	0	-10,000.	0	0	0
8	126	0	-10,000.	0	0	0
9	244	0	-10,000.	0	0	0
10	381	0	-10,000.	0	0	0
11	499	0	-10,000.	0	0	0
12	617	0	-10,000.	0	0	0
13	754	0	-10,000.	0	0	0
14	872	0	-10,000.	0	0	0
15	990	0	-10,000.	0	0	0
16	1127	0	-10,000.	0	0	0
17	1245	0	-10,000.	0	0	0
18	1363	0	-10,000.	0	0	0
19	1500	0	-10,000.	0	0	0
20	1618	0	-10,000.	0	0	0
21	1736	0	-10,000.	0	0	0
22	1873	0	-10,000.	0	0	0
23	1991	0	-10,000.	0	0	0
24	2109	0	-10,000.	0	0	0

RMS CURRENT - NIGHTTIME OPERATION

Frequency = 1.16 MHz

Input power = 50,000. watts

Efficiency = 99.94 %

coordinates in meters

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	19.8463	236.3	-11.0213	-16.5048
2	0	0	.5	19.8599	236.1	-11.0732	-16.4864
3	0	0	1.	19.867	236.	-11.1065	-16.4724
4	0	0	1.5	19.8704	235.9	-11.1308	-16.4603
END	0	0	2.	19.8714	235.9	-11.1431	-16.453
GND	1.056	0	0	.109946	146.2	-.0913576	.0611717
6	1.056	0	.5	.106698	146.	-.0884089	.0597348
7	1.056	0	1.	.0970265	145.3	-.0797377	.0552815
8	1.056	0	1.5	.0752826	144.1	-.0609498	.0441882
END	1.056	0	2.	.104162	142.8	-.0830071	.0629253
2J2	1.056	0	2.	6.62551	235.4	-3.7599	-5.45532
10	1.04905	0	2.50325	6.62203	235.3	-3.77362	-5.4416
11	1.04211	0	3.00649	6.61704	235.1	-3.78669	-5.42644

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

12	1.03516	0	3.50974	6.61085	234.9	-3.79816	-5.41085
13	1.02821	0	4.01298	6.60349	234.8	-3.80813	-5.39483
14	1.02126	0	4.51623	6.59499	234.6	-3.81668	-5.37837
15	1.01432	0	5.01947	6.58537	234.5	-3.82389	-5.36144
16	1.00737	0	5.52272	6.57464	234.4	-3.82985	-5.34399
17	1.00042	0	6.02596	6.56281	234.2	-3.83462	-5.32599
18	.993474	0	6.52921	6.54987	234.1	-3.83824	-5.30741
19	.986526	0	7.03246	6.53584	234.	-3.84077	-5.28826
20	.979579	0	7.5357	6.52072	233.9	-3.84225	-5.26848
21	.972632	0	8.03895	6.5045	233.8	-3.84268	-5.24808
22	.965684	0	8.54219	6.48721	233.7	-3.84212	-5.22704
23	.958737	0	9.04544	6.46883	233.6	-3.84057	-5.20536
24	.951789	0	9.54868	6.44937	233.5	-3.83806	-5.18302
25	.944842	0	10.0519	6.42885	233.4	-3.83461	-5.16002
26	.937895	0	10.5552	6.40724	233.3	-3.83022	-5.13636
27	.930947	0	11.0584	6.38459	233.2	-3.82493	-5.11203
28	.924	0	11.5617	6.36086	233.1	-3.81873	-5.08703
29	.917053	0	12.0649	6.33608	233.	-3.81163	-5.06136
30	.910105	0	12.5682	6.31025	232.9	-3.80365	-5.03502
31	.903158	0	13.0714	6.28336	232.8	-3.79481	-5.008
32	.896211	0	13.5746	6.25545	232.8	-3.7851	-4.98033
33	.889263	0	14.0779	6.22649	232.7	-3.77453	-4.95197
34	.882316	0	14.5811	6.1965	232.6	-3.76313	-4.92295
35	.875368	0	15.0844	6.16547	232.5	-3.75087	-4.89326
36	.868421	0	15.5876	6.13343	232.5	-3.73779	-4.86291
37	.861474	0	16.0909	6.10036	232.4	-3.72389	-4.83188
38	.854526	0	16.5941	6.06628	232.3	-3.70916	-4.8002
39	.847579	0	17.0974	6.0312	232.2	-3.69363	-4.76786
40	.840632	0	17.6006	5.99511	232.2	-3.67729	-4.73486
41	.833684	0	18.1039	5.95802	232.1	-3.66015	-4.7012
42	.826737	0	18.6071	5.91995	232.	-3.64223	-4.6669
43	.819789	0	19.1103	5.88089	232.	-3.62351	-4.63196
44	.812842	0	19.6136	5.84085	231.9	-3.60401	-4.59637
45	.805895	0	20.1168	5.79984	231.8	-3.58375	-4.56014
46	.798947	0	20.6201	5.75786	231.8	-3.56271	-4.52327
47	.792	0	21.1233	5.71492	231.7	-3.54091	-4.48578
48	.785053	0	21.6266	5.67104	231.7	-3.51836	-4.44767
49	.778105	0	22.1298	5.6262	231.6	-3.49506	-4.40894
50	.771158	0	22.6331	5.58044	231.5	-3.47101	-4.36959
51	.764211	0	23.1363	5.53373	231.5	-3.44623	-4.32963
52	.757263	0	23.6396	5.48611	231.4	-3.42072	-4.28907
53	.750316	0	24.1428	5.43756	231.4	-3.39448	-4.2479
54	.743368	0	24.6461	5.38811	231.3	-3.36751	-4.20614
55	.736421	0	25.1493	5.33776	231.3	-3.33985	-4.16378
56	.729474	0	25.6525	5.28651	231.2	-3.31146	-4.12085
57	.722526	0	26.1558	5.23438	231.2	-3.28238	-4.07734
58	.715579	0	26.659	5.18137	231.1	-3.2526	-4.03326
59	.708632	0	27.1623	5.12749	231.1	-3.22214	-3.98861
60	.701684	0	27.6655	5.07275	231.	-3.19099	-3.9434
61	.694737	0	28.1688	5.01716	231.	-3.15917	-3.89763
62	.687789	0	28.672	4.96072	230.9	-3.12667	-3.85132
63	.680842	0	29.1753	4.90345	230.9	-3.09352	-3.80446
64	.673895	0	29.6785	4.84534	230.8	-3.0597	-3.75707
65	.666947	0	30.1818	4.78641	230.8	-3.02522	-3.70914
66	.66	0	30.685	4.72667	230.8	-2.99011	-3.66069
67	.653053	0	31.1882	4.66612	230.7	-2.95435	-3.61172
68	.646105	0	31.6915	4.60477	230.7	-2.91796	-3.56223
69	.639158	0	32.1947	4.54265	230.6	-2.88093	-3.51225
70	.63221	0	32.698	4.47974	230.6	-2.84329	-3.46175
71	.625263	0	33.2012	4.41605	230.6	-2.80504	-3.41076
72	.618316	0	33.7045	4.35161	230.5	-2.76617	-3.35929
73	.611368	0	34.2077	4.28642	230.5	-2.7267	-3.30734
74	.604421	0	34.711	4.22048	230.5	-2.68663	-3.25491

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

75	.597474	0	35.2142	4.1538	230.4	-2.64597	-3.20201
76	.590526	0	35.7175	4.08639	230.4	-2.60474	-3.14864
77	.583579	0	36.2207	4.01827	230.4	-2.56292	-3.09483
78	.576632	0	36.7239	3.94943	230.3	-2.52053	-3.04056
79	.569684	0	37.2272	3.8799	230.3	-2.47757	-2.98585
80	.562737	0	37.7304	3.80967	230.3	-2.43405	-2.93069
81	.555789	0	38.2337	3.73876	230.3	-2.38999	-2.87511
82	.548842	0	38.7369	3.66717	230.2	-2.34537	-2.8191
83	.541895	0	39.2402	3.59491	230.2	-2.30021	-2.76268
84	.534947	0	39.7434	3.52199	230.2	-2.25451	-2.70584
85	.528	0	40.2467	3.44842	230.2	-2.20829	-2.64859
86	.521053	0	40.7499	3.3742	230.2	-2.16154	-2.59094
87	.514105	0	41.2532	3.29935	230.1	-2.11427	-2.53289
88	.507158	0	41.7564	3.22386	230.1	-2.06649	-2.47445
89	.500211	0	42.2596	3.14775	230.1	-2.01819	-2.41563
90	.493263	0	42.7629	3.07103	230.1	-1.96939	-2.35642
91	.486316	0	43.2661	2.9937	230.1	-1.9201	-2.29683
92	.479368	0	43.7694	2.91576	230.1	-1.87031	-2.23688
93	.472421	0	44.2726	2.83722	230.1	-1.82002	-2.17655
94	.465474	0	44.7759	2.7581	230.1	-1.76925	-2.11586
95	.458526	0	45.2791	2.67839	230.1	-1.718	-2.0548
96	.451579	0	45.7824	2.59809	230.1	-1.66626	-1.99339
97	.444632	0	46.2856	2.5172	230.1	-1.61405	-1.93162
98	.437684	0	46.7889	2.43574	230.1	-1.56136	-1.86949
99	.430737	0	47.2921	2.35371	230.2	-1.50819	-1.80701
100	.423789	0	47.7953	2.27109	230.2	-1.45455	-1.74417
101	.416842	0	48.2986	2.18789	230.2	-1.40043	-1.68098
102	.409895	0	48.8018	2.10411	230.2	-1.34582	-1.61742
103	.402947	0	49.3051	2.01975	230.3	-1.29074	-1.5535
104	.396	0	49.8083	1.93479	230.3	-1.23518	-1.48921
105	.389053	0	50.3116	1.84922	230.4	-1.17911	-1.42455
106	.382105	0	50.8148	1.76304	230.5	-1.12254	-1.35948
107	.375158	0	51.3181	1.67623	230.5	-1.06546	-1.29403
108	.368211	0	51.8213	1.58876	230.6	-1.00785	-1.22816
109	.361263	0	52.3246	1.50061	230.7	-.949702	-1.16186
110	.354316	0	52.8278	1.41175	230.9	-.890977	-1.09508
111	.347368	0	53.3311	1.32214	231.	-.83165	-1.02782
112	.340421	0	53.8343	1.23172	231.2	-.771688	-.960019
113	.333474	0	54.3375	1.14044	231.4	-.711046	-.891634
114	.326526	0	54.8408	1.04819	231.7	-.649651	-.822585
115	.319579	0	55.344	.954868	232.	-.58743	-.752794
116	.312632	0	55.8473	.860336	232.5	-.524271	-.682142
117	.305684	0	56.3505	.764388	233.	-.460025	-.610464
118	.298737	0	56.8538	.666743	233.7	-.394478	-.537525
119	.291789	0	57.357	.566994	234.7	-.327309	-.462981
120	.284842	0	57.8603	.464507	236.3	-.258	-.386267
121	.277895	0	58.3635	.358226	238.8	-.185628	-.30638
122	.270947	0	58.8668	.246296	243.9	-.108265	-.221225
END	.264	0	59.37	.13283	258.9	-.0254877	-.130362
GND	-.528	.914	0	.109635	146.3	-.0911674	.0608961
124	-.528	.914	.5	.106392	146.	-.0882208	.0594676
125	-.528	.914	1.	.0967412	145.3	-.0795574	.0550408
126	-.528	.914	1.5	.075053	144.1	-.0607968	.0440079
END	-.528	.914	2.	.103835	142.9	-.0827738	.062692
2J4	-.528	.914	2.	6.59885	234.6	-3.82722	-5.37561
128	-.524526	.907991	2.50325	6.59565	234.4	-3.84088	-5.36193
129	-.521053	.901982	3.00649	6.59094	234.2	-3.85387	-5.34679
130	-.517579	.895974	3.50974	6.585	234.1	-3.86527	-5.33122
131	-.514105	.889965	4.01298	6.57788	233.9	-3.87515	-5.31523
132	-.510632	.883956	4.51623	6.56959	233.8	-3.8836	-5.29879
133	-.507158	.877947	5.01947	6.56017	233.6	-3.89073	-5.28187
134	-.503684	.871939	5.52272	6.54963	233.5	-3.89659	-5.26443
135	-.500211	.86593	6.02596	6.53795	233.4	-3.90125	-5.24644

136	-.496737	.859921	6.52921	6.52517	233.2	-3.90476	-5.22788
137	-.493263	.853912	7.03246	6.51128	233.1	-3.90717	-5.20872
138	-.489789	.847903	7.5357	6.49627	233.	-3.90851	-5.18894
139	-.486316	.841895	8.03895	6.48017	232.9	-3.90882	-5.16854
140	-.482842	.835886	8.54219	6.46297	232.8	-3.90811	-5.14749
141	-.479368	.829877	9.04544	6.44467	232.7	-3.90641	-5.12579
142	-.475895	.823868	9.54868	6.4253	232.6	-3.90376	-5.10344
143	-.472421	.81786	10.0519	6.40483	232.5	-3.90015	-5.08043
144	-.468947	.811851	10.5552	6.38329	232.4	-3.8956	-5.05674
145	-.465474	.805842	11.0584	6.36068	232.3	-3.89014	-5.0324
146	-.462	.799833	11.5617	6.33699	232.2	-3.88376	-5.00737
147	-.458526	.793825	12.0649	6.31223	232.1	-3.87648	-4.98168
148	-.455053	.787816	12.5682	6.28642	232.	-3.86832	-4.95531
149	-.451579	.781807	13.0714	6.25954	231.9	-3.85929	-4.92826
150	-.448105	.775798	13.5746	6.23162	231.9	-3.84938	-4.90054
151	-.444632	.769789	14.0779	6.20266	231.8	-3.83862	-4.87216
152	-.441158	.763781	14.5811	6.17264	231.7	-3.827	-4.8431
153	-.437684	.757772	15.0844	6.1416	231.6	-3.81454	-4.81337
154	-.434211	.751763	15.5876	6.10953	231.5	-3.80125	-4.78297
155	-.430737	.745754	16.0909	6.07643	231.4	-3.78713	-4.75191
156	-.427263	.739746	16.5941	6.04232	231.4	-3.77218	-4.72019
157	-.423789	.733737	17.0974	6.00719	231.3	-3.75643	-4.68781
158	-.420316	.727728	17.6006	5.97106	231.2	-3.73986	-4.65478
159	-.416842	.721719	18.1039	5.93392	231.1	-3.7225	-4.62109
160	-.413368	.715711	18.6071	5.8958	231.1	-3.70434	-4.58675
161	-.409895	.709702	19.1103	5.85668	231.	-3.68539	-4.55176
162	-.406421	.703693	19.6136	5.81658	230.9	-3.66566	-4.51614
163	-.402947	.697684	20.1168	5.7755	230.9	-3.64515	-4.47987
164	-.399474	.691675	20.6201	5.73345	230.8	-3.62388	-4.44298
165	-.396	.685667	21.1233	5.69044	230.7	-3.60183	-4.40545
166	-.392526	.679658	21.6266	5.64648	230.7	-3.57903	-4.36729
167	-.389053	.673649	22.1298	5.60155	230.6	-3.55547	-4.32852
168	-.385579	.66764	22.6331	5.5557	230.5	-3.53117	-4.28913
169	-.382105	.661632	23.1363	5.5089	230.5	-3.50613	-4.24913
170	-.378632	.655623	23.6396	5.46118	230.4	-3.48035	-4.20852
171	-.375158	.649614	24.1428	5.41254	230.3	-3.45385	-4.16732
172	-.371684	.643605	24.6461	5.36299	230.3	-3.42663	-4.12551
173	-.368211	.637596	25.1493	5.31253	230.2	-3.39868	-4.08312
174	-.364737	.631588	25.6525	5.26117	230.2	-3.37003	-4.04014
175	-.361263	.625579	26.1558	5.20891	230.1	-3.34067	-3.99659
176	-.357789	.61957	26.659	5.15578	230.1	-3.31061	-3.95245
177	-.354316	.613561	27.1623	5.10177	230.	-3.27986	-3.90776
178	-.350842	.607553	27.6655	5.0469	229.9	-3.24843	-3.8625
179	-.347368	.601544	28.1688	4.99117	229.9	-3.21631	-3.81668
180	-.343895	.595535	28.672	4.93459	229.8	-3.18353	-3.77032
181	-.340421	.589526	29.1753	4.87716	229.8	-3.15006	-3.72341
182	-.336947	.583518	29.6785	4.8189	229.7	-3.11595	-3.67596
183	-.333474	.577509	30.1818	4.75982	229.7	-3.08117	-3.62798
184	-.33	.5715	30.685	4.69993	229.6	-3.04575	-3.57948
185	-.326526	.565491	31.1882	4.63922	229.6	-3.00969	-3.53046
186	-.323053	.559482	31.6915	4.57772	229.5	-2.97299	-3.48093
187	-.319579	.553474	32.1947	4.51544	229.4	-2.93567	-3.43089
188	-.316105	.547465	32.698	4.45237	229.4	-2.89772	-3.38036
189	-.312632	.541456	33.2012	4.38853	229.3	-2.85915	-3.32932
190	-.309158	.535447	33.7045	4.32392	229.3	-2.81998	-3.2778
191	-.305684	.529439	34.2077	4.25856	229.2	-2.7802	-3.22581
192	-.302211	.52343	34.711	4.19246	229.2	-2.73982	-3.17334
193	-.298737	.517421	35.2142	4.12562	229.1	-2.69886	-3.12039
194	-.295263	.511412	35.7175	4.05805	229.1	-2.6573	-3.067
195	-.291789	.505404	36.2207	3.98975	229.	-2.61517	-3.01314
196	-.288316	.499395	36.7239	3.92075	229.	-2.57247	-2.95883
197	-.284842	.493386	37.2272	3.85105	228.9	-2.5292	-2.90409
198	-.281368	.487377	37.7304	3.78065	228.9	-2.48537	-2.84891

199	-.277895	.481368	38.2337	3.70957	228.9	-2.44098	-2.79329
200	-.274421	.47536	38.7369	3.6378	228.8	-2.39605	-2.73726
201	-.270947	.469351	39.2402	3.56538	228.8	-2.35057	-2.68081
202	-.267474	.463342	39.7434	3.49229	228.7	-2.30457	-2.62394
203	-.264	.457333	40.2467	3.41855	228.7	-2.25803	-2.56667
204	-.260526	.451325	40.7499	3.34416	228.6	-2.21096	-2.50899
205	-.257053	.445316	41.2532	3.26912	228.6	-2.16337	-2.45092
206	-.253579	.439307	41.7564	3.19347	228.5	-2.11527	-2.39246
207	-.250105	.433298	42.2596	3.11719	228.5	-2.06666	-2.33362
208	-.246632	.427289	42.7629	3.04029	228.4	-2.01755	-2.2744
209	-.243158	.421281	43.2661	2.96278	228.4	-1.96793	-2.2148
210	-.239684	.415272	43.7694	2.88468	228.3	-1.91782	-2.15483
211	-.236211	.409263	44.2726	2.80597	228.3	-1.86722	-2.0945
212	-.232737	.403254	44.7759	2.72667	228.2	-1.81614	-2.0338
213	-.229263	.397246	45.2791	2.64678	228.2	-1.76457	-1.97274
214	-.225789	.391237	45.7824	2.56631	228.1	-1.71252	-1.91133
215	-.222316	.385228	46.2856	2.48525	228.1	-1.65999	-1.84957
216	-.218842	.379219	46.7889	2.40361	228.	-1.60699	-1.78744
217	-.215368	.373211	47.2921	2.3214	228.	-1.5535	-1.72497
218	-.211895	.367202	47.7953	2.23861	227.9	-1.49955	-1.66214
219	-.208421	.361193	48.2986	2.15523	227.9	-1.44512	-1.59896
220	-.204947	.355184	48.8018	2.07127	227.8	-1.3902	-1.53542
221	-.201474	.349175	49.3051	1.98672	227.8	-1.33481	-1.47152
222	-.198	.343167	49.8083	1.90158	227.7	-1.27893	-1.40725
223	-.194526	.337158	50.3116	1.81583	227.7	-1.22255	-1.34261
224	-.191053	.331149	50.8148	1.72946	227.6	-1.16568	-1.27759
225	-.187579	.32514	51.3181	1.64246	227.6	-1.1083	-1.21217
226	-.184105	.319132	51.8213	1.55479	227.5	-1.05038	-1.14633
227	-.180632	.313123	52.3246	1.46645	227.4	-.991923	-1.08007
228	-.177158	.307114	52.8278	1.37738	227.4	-.932894	-1.01335
229	-.173684	.301105	53.3311	1.28754	227.3	-.873264	-.946131
230	-.170211	.295097	53.8343	1.19688	227.2	-.813004	-.878376
231	-.166737	.289088	54.3375	1.10533	227.1	-.752051	-.810041
232	-.163263	.283079	54.8408	1.0128	227.	-.690355	-.741056
233	-.159789	.27707	55.344	.91916	226.9	-.627832	-.671328
234	-.156316	.271061	55.8473	.824259	226.8	-.564371	-.60074
235	-.152842	.265053	56.3505	.727873	226.6	-.499822	-.529128
236	-.149368	.259044	56.8538	.629689	226.4	-.433973	-.456262
237	-.145895	.253035	57.357	.529235	226.2	-.366502	-.381793
238	-.142421	.247026	57.8603	.425753	225.8	-.296891	-.305158
239	-.138947	.241018	58.3635	.317892	225.1	-.224215	-.225351
240	-.135474	.235009	58.8668	.202864	223.7	-.146546	-.140279
END	-.132	.229	59.37	.0804741	218.	-.0634472	-.0495028
GND	-.528	-.914	0	.109471	146.2	-.0909977	.0608557
242	-.528	-.914	.5	.106233	146.	-.0880554	.0594288
243	-.528	-.914	1.	.096598	145.3	-.0794067	.0550068
244	-.528	-.914	1.5	.0749447	144.1	-.0606804	.0439841
END	-.528	-.914	2.	.103691	142.8	-.0826187	.0626569
2J6	-.528	-.914	2.	6.62508	234.1	-3.88076	-5.36949
246	-.524526	-.907991	2.50325	6.62199	234.	-3.89439	-5.35579
247	-.521053	-.901982	3.00649	6.6174	233.8	-3.90735	-5.34066
248	-.517579	-.895974	3.50974	6.61157	233.7	-3.91872	-5.32508
249	-.514105	-.889965	4.01298	6.60454	233.5	-3.92857	-5.30908
250	-.510632	-.883956	4.51623	6.59635	233.4	-3.937	-5.29262
251	-.507158	-.877947	5.01947	6.58701	233.2	-3.94409	-5.27569
252	-.503684	-.871939	5.52272	6.57655	233.1	-3.94992	-5.25824
253	-.500211	-.86593	6.02596	6.56496	233.	-3.95456	-5.24024
254	-.496737	-.859921	6.52921	6.55225	232.8	-3.95805	-5.22167
255	-.493263	-.853912	7.03246	6.53843	232.7	-3.96044	-5.2025
256	-.489789	-.847903	7.5357	6.5235	232.6	-3.96175	-5.18272
257	-.486316	-.841895	8.03895	6.50747	232.5	-3.96204	-5.1623
258	-.482842	-.835886	8.54219	6.49033	232.4	-3.96131	-5.14124
259	-.479368	-.829877	9.04544	6.47211	232.3	-3.95961	-5.11954

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

260	-.475895	-.823868	9.54868	6.45279	232.2	-3.95693	-5.09717
261	-.472421	-.81786	10.0519	6.43238	232.1	-3.9533	-5.07415
262	-.468947	-.811851	10.5552	6.41089	232.	-3.94874	-5.05045
263	-.465474	-.805842	11.0584	6.38832	231.9	-3.94324	-5.02608
264	-.462	-.799833	11.5617	6.36468	231.8	-3.93685	-5.00104
265	-.458526	-.793825	12.0649	6.33997	231.7	-3.92955	-4.97532
266	-.455053	-.787816	12.5682	6.3142	231.6	-3.92137	-4.94893
267	-.451579	-.781807	13.0714	6.28736	231.5	-3.91231	-4.92186
268	-.448105	-.775798	13.5746	6.25946	231.4	-3.90237	-4.89412
269	-.444632	-.769789	14.0779	6.23053	231.3	-3.89159	-4.8657
270	-.441158	-.763781	14.5811	6.20054	231.3	-3.87994	-4.83661
271	-.437684	-.757772	15.0844	6.16952	231.2	-3.86746	-4.80685
272	-.434211	-.751763	15.5876	6.13747	231.1	-3.85414	-4.77642
273	-.430737	-.745754	16.0909	6.1044	231.	-3.83999	-4.74533
274	-.427263	-.739746	16.5941	6.0703	230.9	-3.82502	-4.71357
275	-.423789	-.733737	17.0974	6.03518	230.9	-3.80924	-4.68115
276	-.420316	-.727728	17.6006	5.99906	230.8	-3.79264	-4.64807
277	-.416842	-.721719	18.1039	5.96193	230.7	-3.77525	-4.61434
278	-.413368	-.715711	18.6071	5.92381	230.6	-3.75706	-4.57996
279	-.409895	-.709702	19.1103	5.8847	230.6	-3.73808	-4.54493
280	-.406421	-.703693	19.6136	5.8446	230.5	-3.71832	-4.50927
281	-.402947	-.697684	20.1168	5.80353	230.4	-3.69778	-4.47296
282	-.399474	-.691675	20.6201	5.76148	230.3	-3.67647	-4.43602
283	-.396	-.685667	21.1233	5.71848	230.3	-3.6544	-4.39845
284	-.392526	-.679658	21.6266	5.67451	230.2	-3.63157	-4.36025
285	-.389053	-.673649	22.1298	5.6296	230.1	-3.60799	-4.32144
286	-.385579	-.66764	22.6331	5.58374	230.1	-3.58366	-4.282
287	-.382105	-.661632	23.1363	5.53695	230.	-3.55859	-4.24197
288	-.378632	-.655623	23.6396	5.48924	229.9	-3.53279	-4.20132
289	-.375158	-.649614	24.1428	5.4406	229.9	-3.50626	-4.16008
290	-.371684	-.643605	24.6461	5.39105	229.8	-3.47901	-4.11824
291	-.368211	-.637596	25.1493	5.34059	229.7	-3.45104	-4.0758
292	-.364737	-.631588	25.6525	5.28923	229.7	-3.42236	-4.03279
293	-.361263	-.625579	26.1558	5.23698	229.6	-3.39298	-3.98919
294	-.357789	-.61957	26.659	5.18385	229.6	-3.3629	-3.94502
295	-.354316	-.613561	27.1623	5.12985	229.5	-3.33212	-3.90029
296	-.350842	-.607553	27.6655	5.07497	229.4	-3.30066	-3.85499
297	-.347368	-.601544	28.1688	5.01924	229.4	-3.26853	-3.80914
298	-.343895	-.595535	28.672	4.96266	229.3	-3.23571	-3.76273
299	-.340421	-.589526	29.1753	4.90523	229.2	-3.20223	-3.71579
300	-.336947	-.583518	29.6785	4.84697	229.2	-3.16808	-3.6683
301	-.333474	-.577509	30.1818	4.78789	229.1	-3.13328	-3.62028
302	-.33	-.5715	30.685	4.72799	229.1	-3.09784	-3.57174
303	-.326526	-.565491	31.1882	4.66728	229.	-3.06175	-3.52267
304	-.323053	-.559482	31.6915	4.60577	228.9	-3.02502	-3.4731
305	-.319579	-.553474	32.1947	4.54347	228.9	-2.98766	-3.42302
306	-.316105	-.547465	32.698	4.48039	228.8	-2.94968	-3.37244
307	-.312632	-.541456	33.2012	4.41654	228.8	-2.91108	-3.32136
308	-.309158	-.535447	33.7045	4.35192	228.7	-2.87187	-3.2698
309	-.305684	-.529439	34.2077	4.28654	228.6	-2.83205	-3.21776
310	-.302211	-.52343	34.711	4.22042	228.6	-2.79164	-3.16524
311	-.298737	-.517421	35.2142	4.15357	228.5	-2.75063	-3.11226
312	-.295263	-.511412	35.7175	4.08599	228.5	-2.70905	-3.05881
313	-.291789	-.505404	36.2207	4.01768	228.4	-2.66688	-3.00491
314	-.288316	-.499395	36.7239	3.94867	228.4	-2.62414	-2.95057
315	-.284842	-.493386	37.2272	3.87895	228.3	-2.58084	-2.89577
316	-.281368	-.487377	37.7304	3.80853	228.2	-2.53697	-2.84055
317	-.277895	-.481368	38.2337	3.73743	228.2	-2.49254	-2.78489
318	-.274421	-.47536	38.7369	3.66565	228.1	-2.44757	-2.72881
319	-.270947	-.469351	39.2402	3.5932	228.	-2.40205	-2.67231
320	-.267474	-.463342	39.7434	3.5201	228.	-2.356	-2.61541
321	-.264	-.457333	40.2467	3.44634	227.9	-2.30941	-2.5581
322	-.260526	-.451325	40.7499	3.37193	227.9	-2.26231	-2.50038

323	-.257053	-.445316	41.2532	3.29689	227.8	-2.21467	-2.44227
324	-.253579	-.439307	41.7564	3.22121	227.7	-2.16653	-2.38377
325	-.250105	-.433298	42.2596	3.14491	227.7	-2.11787	-2.32488
326	-.246632	-.427289	42.7629	3.06799	227.6	-2.06871	-2.26562
327	-.243158	-.421281	43.2661	2.99047	227.5	-2.01905	-2.20598
328	-.239684	-.415272	43.7694	2.91234	227.5	-1.96888	-2.14598
329	-.236211	-.409263	44.2726	2.83362	227.4	-1.91823	-2.08561
330	-.232737	-.403254	44.7759	2.75429	227.3	-1.8671	-2.02487
331	-.229263	-.397246	45.2791	2.67438	227.2	-1.81547	-1.96377
332	-.225789	-.391237	45.7824	2.59389	227.2	-1.76336	-1.90232
333	-.222316	-.385228	46.2856	2.5128	227.1	-1.71077	-1.8405
334	-.218842	-.379219	46.7889	2.43115	227.	-1.65771	-1.77834
335	-.215368	-.373211	47.2921	2.34891	226.9	-1.60416	-1.71582
336	-.211895	-.367202	47.7953	2.26609	226.8	-1.55014	-1.65296
337	-.208421	-.361193	48.2986	2.1827	226.7	-1.49564	-1.58973
338	-.204947	-.355184	48.8018	2.09872	226.7	-1.44065	-1.52615
339	-.201474	-.349175	49.3051	2.01416	226.5	-1.3852	-1.46221
340	-.198	-.343167	49.8083	1.92899	226.4	-1.32924	-1.3979
341	-.194526	-.337158	50.3116	1.84323	226.3	-1.27279	-1.33322
342	-.191053	-.331149	50.8148	1.75685	226.2	-1.21584	-1.26816
343	-.187579	-.32514	51.3181	1.66983	226.1	-1.15838	-1.2027
344	-.184105	-.319132	51.8213	1.58216	225.9	-1.10039	-1.13683
345	-.180632	-.313123	52.3246	1.49381	225.8	-1.04184	-1.07053
346	-.177158	-.307114	52.8278	1.40474	225.6	-.982738	-1.00376
347	-.173684	-.301105	53.3311	1.31492	225.4	-.923023	-.936507
348	-.170211	-.295097	53.8343	1.22429	225.2	-.862671	-.868724
349	-.166737	-.289088	54.3375	1.13278	225.	-.801634	-.800354
350	-.163263	-.283079	54.8408	1.0403	224.7	-.739854	-.731333
351	-.159789	-.27707	55.344	.946747	224.3	-.677236	-.661575
352	-.156316	-.271061	55.8473	.851959	223.9	-.613682	-.590956
353	-.152842	-.265053	56.3505	.755733	223.4	-.549039	-.519315
354	-.149368	-.259044	56.8538	.657776	222.7	-.483093	-.446419
355	-.145895	-.253035	57.357	.557659	221.8	-.415522	-.371921
356	-.142421	-.247026	57.8603	.45471	220.5	-.345809	-.295258
357	-.138947	-.241018	58.3635	.347782	218.3	-.273029	-.215424
358	-.135474	-.235009	58.8668	.234752	213.7	-.195253	-.130326
END	-.132	-.229	59.37	.118809	199.4	-.112043	-.0395203
2J1	0	0	2.	6.63485	236.6	-3.65139	-5.53973
360	.528	0	2.	6.63327	236.5	-3.66287	-5.53025
END	1.056	0	2.	6.63103	236.3	-3.6769	-5.51825
2J1	0	0	2.	6.60605	235.7	-3.71902	-5.45974
363	-.264	.457	2.	6.60469	235.6	-3.73047	-5.45028
END	-.528	.914	2.	6.60273	235.5	-3.74445	-5.43831
2J1	0	0	2.	6.63137	235.3	-3.77274	-5.45358
366	-.264	-.457	2.	6.63012	235.2	-3.78418	-5.44412
END	-.528	-.914	2.	6.62828	235.	-3.79814	-5.43215
2J3	.264	0	59.37	.0668493	251.8	-.0208942	-.0635001
END	-.132	.229	59.37	.0469742	11.8	.0459811	9.61E-03
2J5	-.132	.229	59.37	.0435507	246.4	-.017466	-.0398949
END	-.132	-.229	59.37	.0598054	33.8	.0497031	.0332609
2J7	-.132	-.229	59.37	.0626533	185.7	-.0623399	-6.26E-03
END	.264	0	59.37	.0670196	86.1	4.59E-03	.066862
GND	-70.1	-12.7	0	31.391	2.3	31.3652	1.2722
375	-70.1	-12.7	.5	31.3611	2.3	31.3368	1.23484
376	-70.1	-12.7	1.	31.3378	2.2	31.3145	1.20986
377	-70.1	-12.7	1.5	31.3174	2.2	31.2947	1.19081
END	-70.1	-12.7	2.	31.3051	2.2	31.2829	1.18064
GND	-69.044	-12.7	0	.129559	217.4	-.10299	-.0786035
379	-69.044	-12.7	.5	.126303	217.2	-.100643	-.076311
380	-69.044	-12.7	1.	.116341	216.7	-.0933262	-.069465
381	-69.044	-12.7	1.5	.0922733	215.8	-.0748381	-.053978
END	-69.044	-12.7	2.	.130465	215.	-.106915	-.0747681
2J15	-69.044	-12.7	2.	10.3407	1.8	10.3354	.332875

383	-69.0509	-12.7	2.50325	10.3167	1.8	10.3117	.319004
384	-69.0579	-12.7	3.00649	10.2899	1.7	10.2854	.304837
385	-69.0648	-12.7	3.50974	10.2622	1.6	10.2581	.291363
386	-69.0718	-12.7	4.01298	10.2337	1.6	10.2299	.278535
387	-69.0787	-12.7	4.51623	10.2043	1.5	10.2008	.266295
388	-69.0857	-12.7	5.01947	10.1739	1.4	10.1707	.254576
389	-69.0926	-12.7	5.52272	10.1424	1.4	10.1395	.243324
390	-69.0996	-12.7	6.02596	10.1099	1.3	10.1072	.232488
391	-69.1065	-12.7	6.52921	10.0761	1.3	10.0737	.222025
392	-69.1135	-12.7	7.03246	10.0413	1.2	10.039	.211903
393	-69.1204	-12.7	7.5357	10.0051	1.2	10.0031	.202093
394	-69.1274	-12.7	8.03895	9.96783	1.1	9.96597	.192572
395	-69.1343	-12.7	8.54219	9.9292	1.1	9.92751	.183319
396	-69.1413	-12.7	9.04544	9.88937	1.	9.88784	.174319
397	-69.1482	-12.7	9.54868	9.84822	1.	9.84682	.165556
398	-69.1552	-12.7	10.0519	9.80573	.9	9.80447	.157021
399	-69.1621	-12.7	10.5552	9.76197	.9	9.76084	.148701
400	-69.1691	-12.7	11.0584	9.71689	.8	9.71587	.140588
401	-69.176	-12.7	11.5617	9.67053	.8	9.66962	.132674
402	-69.1829	-12.7	12.0649	9.62285	.7	9.62204	.124952
403	-69.1899	-12.7	12.5682	9.57382	.7	9.5731	.117417
404	-69.1968	-12.7	13.0714	9.52353	.7	9.5229	.110061
405	-69.2038	-12.7	13.5746	9.47191	.6	9.47135	.102883
406	-69.2107	-12.7	14.0779	9.41895	.6	9.41846	.0958753
407	-69.2177	-12.7	14.5811	9.36465	.5	9.36422	.0890354
408	-69.2246	-12.7	15.0844	9.30908	.5	9.30872	.082361
409	-69.2316	-12.7	15.5876	9.25225	.5	9.25194	.0758472
410	-69.2385	-12.7	16.0909	9.19407	.4	9.19381	.0694924
411	-69.2455	-12.7	16.5941	9.13463	.4	9.13441	.0632935
412	-69.2524	-12.7	17.0974	9.07392	.4	9.07374	.0572483
413	-69.2594	-12.7	17.6006	9.01195	.3	9.0118	.0513547
414	-69.2663	-12.7	18.1039	8.94863	.3	8.94851	.0456108
415	-69.2733	-12.7	18.6071	8.88412	.3	8.88403	.0400148
416	-69.2802	-12.7	19.1103	8.81826	.2	8.8182	.034565
417	-69.2872	-12.7	19.6136	8.75128	.2	8.75123	.0292598
418	-69.2941	-12.7	20.1168	8.68296	.2	8.68293	.0240981
419	-69.301	-12.7	20.6201	8.61344	.1	8.61342	.0190783
420	-69.308	-12.7	21.1233	8.54265	.1	8.54264	.0141994
421	-69.3149	-12.7	21.6266	8.47073	.1	8.47072	9.46E-03
422	-69.3219	-12.7	22.1298	8.39754	0.0	8.39754	4.86E-03
423	-69.3288	-12.7	22.6331	8.32315	0.0	8.32315	3.97E-04
424	-69.3358	-12.7	23.1363	8.24756	360.	8.24756	-3.93E-03
425	-69.3427	-12.7	23.6396	8.17077	359.9	8.17077	-8.12E-03
426	-69.3497	-12.7	24.1428	8.09285	359.9	8.09284	-.0121747
427	-69.3566	-12.7	24.6461	8.01374	359.9	8.01372	-.0160955
428	-69.3636	-12.7	25.1493	7.93356	359.9	7.93353	-.0198828
429	-69.3705	-12.7	25.6525	7.85211	359.8	7.85207	-.0235372
430	-69.3775	-12.7	26.1558	7.7696	359.8	7.76955	-.0270594
431	-69.3844	-12.7	26.659	7.68596	359.8	7.6859	-.0304501
432	-69.3914	-12.7	27.1623	7.60127	359.7	7.60119	-.0337098
433	-69.3983	-12.7	27.6655	7.51544	359.7	7.51535	-.0368392
434	-69.4053	-12.7	28.1688	7.42848	359.7	7.42838	-.0398388
435	-69.4122	-12.7	28.672	7.34054	359.7	7.34041	-.0427091
436	-69.4192	-12.7	29.1753	7.25146	359.6	7.25132	-.0454507
437	-69.4261	-12.7	29.6785	7.16132	359.6	7.16116	-.0480642
438	-69.4331	-12.7	30.1818	7.07019	359.6	7.07001	-.05055
439	-69.44	-12.7	30.685	6.978	359.6	6.9778	-.0529087
440	-69.4469	-12.7	31.1882	6.8848	359.5	6.88458	-.0551406
441	-69.4539	-12.7	31.6915	6.7906	359.5	6.79036	-.0572464
442	-69.4608	-12.7	32.1947	6.69541	359.5	6.69515	-.0592265
443	-69.4678	-12.7	32.698	6.59924	359.5	6.59896	-.0610813
444	-69.4747	-12.7	33.2012	6.50211	359.4	6.5018	-.0628113
445	-69.4817	-12.7	33.7045	6.40402	359.4	6.40369	-.064417

446	-69.4886	-12.7	34.2077	6.30498	359.4	6.30464	-.0658989
447	-69.4956	-12.7	34.711	6.20503	359.4	6.20466	-.0672573
448	-69.5025	-12.7	35.2142	6.10416	359.4	6.10377	-.0684928
449	-69.5095	-12.7	35.7175	6.00238	359.3	6.00198	-.0696059
450	-69.5164	-12.7	36.2207	5.89972	359.3	5.8993	-.0705968
451	-69.5234	-12.7	36.7239	5.79617	359.3	5.79573	-.0714659
452	-69.5303	-12.7	37.2272	5.69175	359.3	5.6913	-.0722141
453	-69.5373	-12.7	37.7304	5.58648	359.3	5.58601	-.0728413
454	-69.5442	-12.7	38.2337	5.48036	359.2	5.47987	-.0733483
455	-69.5512	-12.7	38.7369	5.37341	359.2	5.3729	-.073735
456	-69.5581	-12.7	39.2402	5.26563	359.2	5.26511	-.0740023
457	-69.565	-12.7	39.7434	5.15704	359.2	5.15651	-.0741501
458	-69.572	-12.7	40.2467	5.04766	359.2	5.04711	-.0741798
459	-69.5789	-12.7	40.7499	4.93748	359.1	4.93692	-.0740914
460	-69.5859	-12.7	41.2532	4.82652	359.1	4.82596	-.0738842
461	-69.5928	-12.7	41.7564	4.7148	359.1	4.71423	-.0735604
462	-69.5998	-12.7	42.2596	4.60232	359.1	4.60174	-.0731191
463	-69.6067	-12.7	42.7629	4.48909	359.1	4.4885	-.0725605
464	-69.6137	-12.7	43.2661	4.37511	359.1	4.37452	-.071886
465	-69.6206	-12.7	43.7694	4.26041	359.	4.25981	-.0710954
466	-69.6276	-12.7	44.2726	4.14497	359.	4.14438	-.0701895
467	-69.6345	-12.7	44.7759	4.02882	359.	4.02823	-.0691678
468	-69.6415	-12.7	45.2791	3.91196	359.	3.91137	-.068031
469	-69.6484	-12.7	45.7824	3.7944	359.	3.79381	-.0667794
470	-69.6554	-12.7	46.2856	3.67613	359.	3.67554	-.065413
471	-69.6623	-12.7	46.7889	3.55716	359.	3.55658	-.0639321
472	-69.6693	-12.7	47.2921	3.43748	359.	3.43692	-.0623369
473	-69.6762	-12.7	47.7953	3.31711	359.	3.31656	-.0606274
474	-69.6832	-12.7	48.2986	3.19604	358.9	3.1955	-.0588037
475	-69.6901	-12.7	48.8018	3.07427	358.9	3.07374	-.0568656
476	-69.6971	-12.7	49.3051	2.95177	358.9	2.95126	-.0548129
477	-69.704	-12.7	49.8083	2.82856	358.9	2.82807	-.0526455
478	-69.7109	-12.7	50.3116	2.7046	358.9	2.70413	-.0503629
479	-69.7179	-12.7	50.8148	2.57989	358.9	2.57944	-.0479644
480	-69.7248	-12.7	51.3181	2.45439	358.9	2.45397	-.0454495
481	-69.7318	-12.7	51.8213	2.32808	358.9	2.32768	-.0428171
482	-69.7387	-12.7	52.3246	2.20091	359.	2.20055	-.0400658
483	-69.7457	-12.7	52.8278	2.07284	359.	2.07251	-.037194
484	-69.7526	-12.7	53.3311	1.94381	359.	1.94351	-.0341995
485	-69.7596	-12.7	53.8343	1.81374	359.	1.81347	-.0310796
486	-69.7665	-12.7	54.3375	1.68251	359.1	1.68228	-.0278308
487	-69.7735	-12.7	54.8408	1.55002	359.1	1.54982	-.0244485
488	-69.7804	-12.7	55.344	1.41607	359.2	1.41592	-.0209266
489	-69.7874	-12.7	55.8473	1.28045	359.2	1.28034	-.0172571
490	-69.7943	-12.7	56.3505	1.14286	359.3	1.14278	-.0134287
491	-69.8013	-12.7	56.8538	1.00283	359.5	1.00278	-9.43E-03
492	-69.8082	-12.7	57.357	.859703	359.7	.859687	-5.22E-03
493	-69.8152	-12.7	57.8603	.712418	359.9	.712418	-7.84E-04
494	-69.8221	-12.7	58.3635	.559042	.4	.559028	3.96E-03
495	-69.829	-12.7	58.8668	.395609	1.3	.395504	9.15E-03
END	-69.836	-12.7	59.37	.221493	3.8	.220996	.0148365
GND	-70.628	-11.786	0	.130661	217.	-.104399	-.0785681
497	-70.628	-11.786	.5	.127403	216.8	-.102048	-.0762743
498	-70.628	-11.786	1.	.117426	216.2	-.0947036	-.0694264
499	-70.628	-11.786	1.5	.0932471	215.3	-.0760621	-.0539404
END	-70.628	-11.786	2.	.131997	214.5	-.108824	-.0747038
2J17	-70.628	-11.786	2.	10.2647	1.6	10.2606	.292187
501	-70.6245	-11.792	2.50325	10.2402	1.6	10.2364	.278343
502	-70.621	-11.798	3.00649	10.2128	1.5	10.2094	.264211
503	-70.6176	-11.804	3.50974	10.1845	1.4	10.1814	.250776
504	-70.6141	-11.81	4.01298	10.1554	1.3	10.1526	.237996
505	-70.6106	-11.816	4.51623	10.1254	1.3	10.1229	.225808
506	-70.6072	-11.8221	5.01947	10.0944	1.2	10.0921	.214151

507	-70.6037	-11.8281	5.52272	10.0623	1.2	10.0603	.202965
508	-70.6002	-11.8341	6.02596	10.0292	1.1	10.0273	.1922
509	-70.5967	-11.8401	6.52921	9.99492	1.	9.99327	.181816
510	-70.5933	-11.8461	7.03246	9.95946	1.	9.95798	.171779
511	-70.5898	-11.8521	7.5357	9.92275	.9	9.92142	.162061
512	-70.5863	-11.8581	8.03895	9.88484	.9	9.88367	.152636
513	-70.5828	-11.8641	8.54219	9.84575	.8	9.8447	.143486
514	-70.5794	-11.8701	9.04544	9.80532	.8	9.8044	.134595
515	-70.5759	-11.8761	9.54868	9.76356	.7	9.76275	.125948
516	-70.5724	-11.8821	10.0519	9.72061	.7	9.7199	.117533
517	-70.5689	-11.8881	10.5552	9.67632	.6	9.6757	.109339
518	-70.5655	-11.8942	11.0584	9.6307	.6	9.63017	.101357
519	-70.562	-11.9002	11.5617	9.58381	.6	9.58336	.0935793
520	-70.5585	-11.9062	12.0649	9.53559	.5	9.5352	.0859991
521	-70.5551	-11.9122	12.5682	9.48603	.5	9.4857	.0786105
522	-70.5516	-11.9182	13.0714	9.4352	.4	9.43493	.071408
523	-70.5481	-11.9242	13.5746	9.38304	.4	9.38282	.0643858
524	-70.5446	-11.9302	14.0779	9.32954	.4	9.32936	.0575404
525	-70.5412	-11.9362	14.5811	9.27477	.3	9.27463	.0508676
526	-70.5377	-11.9422	15.0844	9.21874	.3	9.21863	.0443639
527	-70.5342	-11.9482	15.5876	9.16136	.2	9.16128	.0380261
528	-70.5307	-11.9542	16.0909	9.10265	.2	9.10259	.0318513
529	-70.5273	-11.9603	16.5941	9.04267	.2	9.04263	.0258367
530	-70.5238	-11.9663	17.0974	8.98149	.1	8.98147	.0199801
531	-70.5203	-11.9723	17.6006	8.91897	.1	8.91896	.0142791
532	-70.5168	-11.9783	18.1039	8.85518	.1	8.85518	8.73E-03
533	-70.5134	-11.9843	18.6071	8.79012	0.0	8.79012	3.34E-03
534	-70.5099	-11.9903	19.1103	8.7238	360.	8.7238	-1.91E-03
535	-70.5064	-11.9963	19.6136	8.65627	360.	8.65627	-7.01E-03
536	-70.5029	-12.0023	20.1168	8.58747	359.9	8.58747	-.0119572
537	-70.4995	-12.0083	20.6201	8.51748	359.9	8.51746	-.0167622
538	-70.496	-12.0143	21.1233	8.44621	359.9	8.44619	-.021423
539	-70.4925	-12.0203	21.6266	8.37375	359.8	8.37371	-.025941
540	-70.4891	-12.0264	22.1298	8.30008	359.8	8.30003	-.0303172
541	-70.4856	-12.0324	22.6331	8.22522	359.8	8.22514	-.0345528
542	-70.4821	-12.0384	23.1363	8.14915	359.7	8.14906	-.0386487
543	-70.4786	-12.0444	23.6396	8.07196	359.7	8.07184	-.0426061
544	-70.4752	-12.0504	24.1428	7.99356	359.7	7.99343	-.0464257
545	-70.4717	-12.0564	24.6461	7.91403	359.6	7.91388	-.0501085
546	-70.4682	-12.0624	25.1493	7.83331	359.6	7.83312	-.0536554
547	-70.4647	-12.0684	25.6525	7.75152	359.6	7.75131	-.057067
548	-70.4613	-12.0744	26.1558	7.66861	359.5	7.66837	-.0603443
549	-70.4578	-12.0804	26.659	7.58449	359.5	7.58422	-.063488
550	-70.4543	-12.0864	27.1623	7.49931	359.5	7.49902	-.0664987
551	-70.4508	-12.0924	27.6655	7.41307	359.5	7.41275	-.0693773
552	-70.4474	-12.0985	28.1688	7.32578	359.4	7.32542	-.0721243
553	-70.4439	-12.1045	28.672	7.23735	359.4	7.23696	-.0747406
554	-70.4404	-12.1105	29.1753	7.14786	359.4	7.14744	-.0772267
555	-70.437	-12.1165	29.6785	7.05737	359.4	7.05692	-.0795828
556	-70.4335	-12.1225	30.1818	6.96584	359.3	6.96535	-.0818102
557	-70.43	-12.1285	30.685	6.87327	359.3	6.87276	-.0839089
558	-70.4265	-12.1345	31.1882	6.7797	359.3	6.77916	-.0858803
559	-70.423	-12.1405	31.6915	6.68514	359.2	6.68456	-.0877245
560	-70.4196	-12.1465	32.1947	6.58959	359.2	6.58898	-.089442
561	-70.4161	-12.1525	32.698	6.49306	359.2	6.49242	-.091033
562	-70.4126	-12.1585	33.2012	6.39557	359.2	6.3949	-.0924996
563	-70.4092	-12.1646	33.7045	6.29713	359.1	6.29643	-.0938402
564	-70.4057	-12.1706	34.2077	6.19776	359.1	6.19703	-.0950565
565	-70.4022	-12.1766	34.711	6.09746	359.1	6.0967	-.0961496
566	-70.3987	-12.1826	35.2142	5.99625	359.1	5.99546	-.0971191
567	-70.3953	-12.1886	35.7175	5.89414	359.	5.89332	-.0979655
568	-70.3918	-12.1946	36.2207	5.79115	359.	5.7903	-.0986903
569	-70.3883	-12.2006	36.7239	5.68728	359.	5.68641	-.0992927

570	-70.3848	-12.2066	37.2272	5.58255	359.	5.58166	-.0997743
571	-70.3814	-12.2126	37.7304	5.47697	359.	5.47606	-.100136
572	-70.3779	-12.2186	38.2337	5.37056	358.9	5.36963	-.100377
573	-70.3744	-12.2246	38.7369	5.26332	358.9	5.26236	-.100498
574	-70.3709	-12.2306	39.2402	5.15527	358.9	5.15429	-.1005
575	-70.3675	-12.2367	39.7434	5.04642	358.9	5.04542	-.100384
576	-70.364	-12.2427	40.2467	4.93677	358.8	4.93576	-.10015
577	-70.3605	-12.2487	40.7499	4.82635	358.8	4.82531	-.0997976
578	-70.3571	-12.2547	41.2532	4.71515	358.8	4.71411	-.0993288
579	-70.3536	-12.2607	41.7564	4.6032	358.8	4.60214	-.0987426
580	-70.3501	-12.2667	42.2596	4.4905	358.7	4.48943	-.0980404
581	-70.3466	-12.2727	42.7629	4.37704	358.7	4.37596	-.097223
582	-70.3432	-12.2787	43.2661	4.26287	358.7	4.26178	-.0962896
583	-70.3397	-12.2847	43.7694	4.14796	358.7	4.14687	-.095241
584	-70.3362	-12.2907	44.2726	4.03234	358.7	4.03124	-.0940785
585	-70.3327	-12.2967	44.7759	3.91601	358.6	3.91491	-.0928015
586	-70.3293	-12.3028	45.2791	3.79897	358.6	3.79787	-.0914106
587	-70.3258	-12.3088	45.7824	3.68124	358.6	3.68014	-.0899066
588	-70.3223	-12.3148	46.2856	3.56281	358.6	3.56171	-.0882887
589	-70.3188	-12.3208	46.7889	3.44369	358.6	3.4426	-.0865584
590	-70.3154	-12.3268	47.2921	3.32388	358.5	3.3228	-.084715
591	-70.3119	-12.3328	47.7953	3.20337	358.5	3.20231	-.0827584
592	-70.3084	-12.3388	48.2986	3.08218	358.5	3.08112	-.0806894
593	-70.3049	-12.3448	48.8018	2.96029	358.5	2.95924	-.078508
594	-70.3015	-12.3508	49.3051	2.83768	358.5	2.83666	-.0762134
595	-70.298	-12.3568	49.8083	2.71436	358.4	2.71336	-.0738057
596	-70.2945	-12.3628	50.3116	2.59031	358.4	2.58933	-.0712849
597	-70.2911	-12.3689	50.8148	2.46552	358.4	2.46456	-.0686501
598	-70.2876	-12.3749	51.3181	2.33994	358.4	2.33901	-.0659004
599	-70.2841	-12.3809	51.8213	2.21356	358.4	2.21266	-.0630352
600	-70.2806	-12.3869	52.3246	2.08633	358.4	2.08546	-.0600531
601	-70.2772	-12.3929	52.8278	1.95821	358.3	1.95738	-.0569523
602	-70.2737	-12.3989	53.3311	1.82913	358.3	1.82834	-.053731
603	-70.2702	-12.4049	53.8343	1.69901	358.3	1.69827	-.0503862
604	-70.2667	-12.4109	54.3375	1.56777	358.3	1.56706	-.0469145
605	-70.2633	-12.4169	54.8408	1.43525	358.3	1.43459	-.0433114
606	-70.2598	-12.4229	55.344	1.30129	358.3	1.30069	-.0395708
607	-70.2563	-12.4289	55.8473	1.16567	358.2	1.16512	-.0356846
608	-70.2528	-12.4349	56.3505	1.02807	358.2	1.02758	-.0316415
609	-70.2494	-12.441	56.8538	.888041	358.2	.887618	-.0274257
610	-70.2459	-12.447	57.357	.744911	358.2	.744556	-.0230131
611	-70.2424	-12.453	57.8603	.59761	358.2	.597328	-.0183651
612	-70.239	-12.459	58.3635	.444193	358.3	.443991	-.0134131
613	-70.2355	-12.465	58.8668	.280639	358.4	.280524	-8.01E-03
END	-70.232	-12.471	59.37	.1061	358.9	.106079	-2.12E-03
GND	-70.628	-13.614	0	.130565	216.9	-.104361	-.0784606
615	-70.628	-13.614	.5	.12731	216.7	-.102011	-.0761689
616	-70.628	-13.614	1.	.117344	216.2	-.0946732	-.0693291
617	-70.628	-13.614	1.5	.093186	215.3	-.0760423	-.0538627
END	-70.628	-13.614	2.	.131876	214.4	-.108753	-.0745928
2J19	-70.628	-13.614	2.	10.2551	1.5	10.2518	.259728
619	-70.6245	-13.608	2.50325	10.2305	1.4	10.2275	.245907
620	-70.621	-13.602	3.00649	10.2032	1.3	10.2005	.2318
621	-70.6176	-13.596	3.50974	10.175	1.2	10.1727	.218393
622	-70.6141	-13.59	4.01298	10.1459	1.2	10.1438	.20564
623	-70.6106	-13.584	4.51623	10.1159	1.1	10.114	.193482
624	-70.6072	-13.5779	5.01947	10.0849	1.	10.0833	.181854
625	-70.6037	-13.5719	5.52272	10.0529	1.	10.0515	.170699
626	-70.6002	-13.5659	6.02596	10.0198	.9	10.0185	.159967
627	-70.5967	-13.5599	6.52921	9.98555	.9	9.98443	.149616
628	-70.5933	-13.5539	7.03246	9.95012	.8	9.94914	.139613
629	-70.5898	-13.5479	7.5357	9.91344	.8	9.91259	.12993
630	-70.5863	-13.5419	8.03895	9.87556	.7	9.87483	.120542

631	-70.5828	-13.5359	8.54219	9.83642	.6	9.83579	.11143
632	-70.5794	-13.5299	9.04544	9.79595	.6	9.79542	.102577
633	-70.5759	-13.5239	9.54868	9.75429	.6	9.75384	.0939682
634	-70.5724	-13.5179	10.0519	9.71123	.5	9.71085	.0855932
635	-70.5689	-13.5119	10.5552	9.66696	.5	9.66665	.077441
636	-70.5655	-13.5058	11.0584	9.6213	.4	9.62105	.0695013
637	-70.562	-13.4998	11.5617	9.57436	.4	9.57416	.0617672
638	-70.5585	-13.4938	12.0649	9.52616	.3	9.52601	.0542317
639	-70.5551	-13.4878	12.5682	9.47663	.3	9.47651	.0468883
640	-70.5516	-13.4818	13.0714	9.42576	.2	9.42567	.0397317
641	-70.5481	-13.4758	13.5746	9.37354	.2	9.37349	.032757
642	-70.5446	-13.4698	14.0779	9.32007	.2	9.32003	.0259598
643	-70.5412	-13.4638	14.5811	9.26532	.1	9.2653	.0193361
644	-70.5377	-13.4578	15.0844	9.20923	.1	9.20923	.0128824
645	-70.5342	-13.4518	15.5876	9.15181	0.0	9.15181	6.6E-03
646	-70.5307	-13.4458	16.0909	9.09312	0.0	9.09312	4.72E-04
647	-70.5273	-13.4397	16.5941	9.03316	360.	9.03316	-5.49E-03
648	-70.5238	-13.4337	17.0974	8.97193	359.9	8.97192	-.0112926
649	-70.5203	-13.4277	17.6006	8.90936	359.9	8.90934	-.0169393
650	-70.5168	-13.4217	18.1039	8.84559	359.9	8.84556	-.0224316
651	-70.5134	-13.4157	18.6071	8.78048	359.8	8.78044	-.0277713
652	-70.5099	-13.4097	19.1103	8.71417	359.8	8.71411	-.0329603
653	-70.5064	-13.4037	19.6136	8.64659	359.7	8.64651	-.0380001
654	-70.5029	-13.3977	20.1168	8.57774	359.7	8.57764	-.0428923
655	-70.4995	-13.3917	20.6201	8.5077	359.7	8.50756	-.0476383
656	-70.496	-13.3857	21.1233	8.43645	359.6	8.43629	-.0522395
657	-70.4925	-13.3797	21.6266	8.36393	359.6	8.36374	-.0566971
658	-70.4891	-13.3736	22.1298	8.29028	359.6	8.29006	-.0610123
659	-70.4856	-13.3676	22.6331	8.21536	359.5	8.2151	-.0651862
660	-70.4821	-13.3616	23.1363	8.13931	359.5	8.13902	-.0692197
661	-70.4786	-13.3556	23.6396	8.06206	359.5	8.06173	-.0731142
662	-70.4752	-13.3496	24.1428	7.98361	359.4	7.98324	-.0768704
663	-70.4717	-13.3436	24.6461	7.90403	359.4	7.90362	-.0804886
664	-70.4682	-13.3376	25.1493	7.82332	359.4	7.82287	-.0839704
665	-70.4647	-13.3316	25.6525	7.74148	359.4	7.74099	-.0873172
666	-70.4613	-13.3256	26.1558	7.65851	359.3	7.65797	-.0905281
667	-70.4578	-13.3196	26.659	7.57441	359.3	7.57383	-.0936055
668	-70.4543	-13.3136	27.1623	7.48924	359.3	7.48862	-.0965492
669	-70.4508	-13.3076	27.6655	7.40295	359.2	7.40228	-.0993599
670	-70.4474	-13.3015	28.1688	7.3156	359.2	7.31488	-.102039
671	-70.4439	-13.2955	28.672	7.22718	359.2	7.22643	-.104587
672	-70.4404	-13.2895	29.1753	7.13771	359.1	7.13691	-.107004
673	-70.437	-13.2835	29.6785	7.0472	359.1	7.04635	-.109291
674	-70.4335	-13.2775	30.1818	6.95565	359.1	6.95475	-.111448
675	-70.43	-13.2715	30.685	6.86307	359.1	6.86213	-.113477
676	-70.4265	-13.2655	31.1882	6.76949	359.	6.7685	-.115377
677	-70.423	-13.2595	31.6915	6.6749	359.	6.67387	-.11715
678	-70.4196	-13.2535	32.1947	6.57933	359.	6.57826	-.118795
679	-70.4161	-13.2475	32.698	6.4828	358.9	6.48168	-.120314
680	-70.4126	-13.2415	33.2012	6.38529	358.9	6.38413	-.121708
681	-70.4092	-13.2354	33.7045	6.28684	358.9	6.28564	-.122976
682	-70.4057	-13.2294	34.2077	6.18745	358.9	6.18621	-.124119
683	-70.4022	-13.2234	34.711	6.08715	358.8	6.08586	-.125138
684	-70.3987	-13.2174	35.2142	5.98593	358.8	5.9846	-.126034
685	-70.3953	-13.2114	35.7175	5.88381	358.8	5.88244	-.126806
686	-70.3918	-13.2054	36.2207	5.78081	358.7	5.7794	-.127456
687	-70.3883	-13.1994	36.7239	5.67692	358.7	5.67548	-.127984
688	-70.3848	-13.1934	37.2272	5.57218	358.7	5.57071	-.12839
689	-70.3814	-13.1874	37.7304	5.46659	358.7	5.46508	-.128675
690	-70.3779	-13.1814	38.2337	5.36016	358.6	5.35861	-.12884
691	-70.3744	-13.1754	38.7369	5.2529	358.6	5.25132	-.128884
692	-70.3709	-13.1694	39.2402	5.14483	358.6	5.14322	-.12881
693	-70.3675	-13.1633	39.7434	5.03596	358.5	5.03431	-.128616

694	-70.364	-13.1573	40.2467	4.92629	358.5	4.92462	-.128305
695	-70.3605	-13.1513	40.7499	4.81584	358.5	4.81414	-.127875
696	-70.3571	-13.1453	41.2532	4.70462	358.4	4.7029	-.127327
697	-70.3536	-13.1393	41.7564	4.59265	358.4	4.5909	-.126663
698	-70.3501	-13.1333	42.2596	4.47993	358.4	4.47816	-.125883
699	-70.3466	-13.1273	42.7629	4.36647	358.4	4.36468	-.124986
700	-70.3432	-13.1213	43.2661	4.25227	358.3	4.25047	-.123974
701	-70.3397	-13.1153	43.7694	4.13735	358.3	4.13552	-.122846
702	-70.3362	-13.1093	44.2726	4.02172	358.3	4.01988	-.121604
703	-70.3327	-13.1033	44.7759	3.90538	358.2	3.90353	-.120247
704	-70.3293	-13.0972	45.2791	3.78834	358.2	3.78648	-.118776
705	-70.3258	-13.0912	45.7824	3.6706	358.2	3.66873	-.117192
706	-70.3223	-13.0852	46.2856	3.55217	358.1	3.55029	-.115494
707	-70.3188	-13.0792	46.7889	3.43304	358.1	3.43116	-.113682
708	-70.3154	-13.0732	47.2921	3.31323	358.1	3.31135	-.111758
709	-70.3119	-13.0672	47.7953	3.19273	358.	3.19084	-.10972
710	-70.3084	-13.0612	48.2986	3.07153	358.	3.06965	-.107569
711	-70.3049	-13.0552	48.8018	2.94963	358.	2.94775	-.105306
712	-70.3015	-13.0492	49.3051	2.82703	357.9	2.82516	-.102929
713	-70.298	-13.0432	49.8083	2.70372	357.9	2.70185	-.100439
714	-70.2945	-13.0372	50.3116	2.57967	357.8	2.57782	-.0978347
715	-70.2911	-13.0311	50.8148	2.45487	357.8	2.45303	-.0951166
716	-70.2876	-13.0251	51.3181	2.3293	357.7	2.32747	-.0922832
717	-70.2841	-13.0191	51.8213	2.20292	357.7	2.20111	-.0893338
718	-70.2806	-13.0131	52.3246	2.0757	357.6	2.07391	-.0862671
719	-70.2772	-13.0071	52.8278	1.94758	357.6	1.94581	-.0830816
720	-70.2737	-13.0011	53.3311	1.81851	357.5	1.81676	-.0797752
721	-70.2702	-12.9951	53.8343	1.68841	357.4	1.68668	-.076345
722	-70.2667	-12.9891	54.3375	1.55717	357.3	1.55547	-.0727868
723	-70.2633	-12.9831	54.8408	1.42467	357.2	1.42299	-.0690973
724	-70.2598	-12.9771	55.344	1.29073	357.1	1.28908	-.0652698
725	-70.2563	-12.9711	55.8473	1.15513	357.	1.1535	-.0612962
726	-70.2528	-12.9651	56.3505	1.01756	356.8	1.01595	-.0571653
727	-70.2494	-12.959	56.8538	.877572	356.5	.875979	-.0528612
728	-70.2459	-12.953	57.357	.734511	356.2	.732917	-.0483597
729	-70.2424	-12.947	57.8603	.587307	355.7	.585685	-.0436224
730	-70.239	-12.941	58.3635	.434063	354.9	.432345	-.0385803
731	-70.2355	-12.935	58.8668	.270905	353.	.268876	-.0330906
END	-70.232	-12.929	59.37	.0982415	344.	.0944287	-.0271037
2J14	-70.1	-12.7	2.	10.4877	2.4	10.4788	.431601
733	-69.572	-12.7	2.	10.4712	2.3	10.4628	.420906
END	-69.044	-12.7	2.	10.4502	2.2	10.4423	.407643
2J14	-70.1	-12.7	2.	10.4138	2.2	10.4064	.390813
736	-70.364	-12.243	2.	10.3975	2.1	10.3905	.380144
END	-70.628	-11.786	2.	10.3759	2.	10.3694	.366891
2J14	-70.1	-12.7	2.	10.4038	2.	10.3976	.358221
739	-70.364	-13.157	2.	10.3876	1.9	10.3818	.347557
END	-70.628	-13.614	2.	10.3659	1.8	10.3605	.33432
2J16	-69.836	-12.7	59.37	.10881	1.7	.108762	3.24E-03
END	-70.232	-12.471	59.37	.0326714	165.9	-.0316853	7.97E-03
2J18	-70.232	-12.471	59.37	.0746227	4.5	.0743934	5.85E-03
END	-70.232	-12.929	59.37	.0670505	170.8	-.0661859	.0107328
2J20	-70.232	-12.929	59.37	.0326446	329.9	.0282429	-.016371
END	-69.836	-12.7	59.37	.112832	185.9	-.112234	-.011596
GND	-131.8	-28.	0	16.5384	131.7	-11.0008	12.3491
748	-131.8	-28.	.5	16.4995	131.7	-10.974	12.3209
749	-131.8	-28.	1.	16.4719	131.7	-10.9549	12.3009
750	-131.8	-28.	1.5	16.4495	131.7	-10.9395	12.2846
END	-131.8	-28.	2.	16.4368	131.7	-10.9308	12.2754
GND	-130.744	-28.	0	.106251	313.2	.0727458	-.0774424
752	-130.744	-28.	.5	.103545	313.2	.0708882	-.0754745
753	-130.744	-28.	1.	.09529	313.2	.0652242	-.0694694
754	-130.744	-28.	1.5	.075474	313.2	.0516455	-.0550369

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

END	-130.744	-28.	2.	.10652	313.2	.0728676	-.0776969
2J28	-130.744	-28.	2.	5.36923	131.9	-3.58559	3.99653
756	-130.751	-28.	2.50325	5.3472	131.9	-3.57052	3.98043
757	-130.758	-28.	3.00649	5.32349	131.9	-3.55433	3.96311
758	-130.765	-28.	3.50974	5.29978	131.9	-3.53815	3.94577
759	-130.772	-28.	4.01298	5.27604	131.9	-3.52196	3.92841
760	-130.779	-28.	4.51623	5.25222	131.9	-3.50573	3.91097
761	-130.786	-28.	5.01947	5.22825	131.9	-3.4894	3.89341
762	-130.793	-28.	5.52272	5.20404	131.9	-3.47292	3.87568
763	-130.8	-28.	6.02596	5.17956	131.9	-3.45626	3.85773
764	-130.807	-28.	6.52921	5.15475	131.9	-3.43939	3.83953
765	-130.813	-28.	7.03246	5.12956	131.8	-3.42227	3.82105
766	-130.82	-28.	7.5357	5.10397	131.8	-3.40488	3.80227
767	-130.827	-28.	8.03895	5.07793	131.8	-3.38721	3.78315
768	-130.834	-28.	8.54219	5.05145	131.8	-3.36923	3.7637
769	-130.841	-28.	9.04544	5.02448	131.8	-3.35093	3.74389
770	-130.848	-28.	9.54868	4.99703	131.8	-3.33231	3.72371
771	-130.855	-28.	10.0519	4.96907	131.8	-3.31336	3.70315
772	-130.862	-28.	10.5552	4.94061	131.8	-3.29407	3.68221
773	-130.869	-28.	11.0584	4.91162	131.8	-3.27444	3.66089
774	-130.876	-28.	11.5617	4.88211	131.8	-3.25445	3.63917
775	-130.883	-28.	12.0649	4.85207	131.8	-3.23411	3.61705
776	-130.89	-28.	12.5682	4.82149	131.8	-3.21342	3.59453
777	-130.897	-28.	13.0714	4.79036	131.8	-3.19236	3.57161
778	-130.904	-28.	13.5746	4.7587	131.8	-3.17096	3.54828
779	-130.911	-28.	14.0779	4.7265	131.8	-3.14919	3.52455
780	-130.918	-28.	14.5811	4.69375	131.8	-3.12706	3.50041
781	-130.925	-28.	15.0844	4.66046	131.8	-3.10456	3.47586
782	-130.932	-28.	15.5876	4.62663	131.8	-3.08172	3.4509
783	-130.939	-28.	16.0909	4.59225	131.8	-3.0585	3.42555
784	-130.945	-28.	16.5941	4.55734	131.8	-3.03493	3.39978
785	-130.952	-28.	17.0974	4.52188	131.7	-3.01101	3.37361
786	-130.959	-28.	17.6006	4.48589	131.7	-2.98673	3.34704
787	-130.966	-28.	18.1039	4.44937	131.7	-2.96209	3.32007
788	-130.973	-28.	18.6071	4.4123	131.7	-2.93711	3.29269
789	-130.98	-28.	19.1103	4.37472	131.7	-2.91178	3.26492
790	-130.987	-28.	19.6136	4.3366	131.7	-2.88609	3.23675
791	-130.994	-28.	20.1168	4.29796	131.7	-2.86007	3.20819
792	-131.001	-28.	20.6201	4.25881	131.7	-2.8337	3.17924
793	-131.008	-28.	21.1233	4.21914	131.7	-2.807	3.1499
794	-131.015	-28.	21.6266	4.17895	131.7	-2.77996	3.12018
795	-131.022	-28.	22.1298	4.13827	131.7	-2.75259	3.09007
796	-131.029	-28.	22.6331	4.09708	131.7	-2.72488	3.05959
797	-131.036	-28.	23.1363	4.05539	131.7	-2.69685	3.02872
798	-131.043	-28.	23.6396	4.01321	131.7	-2.6685	2.99749
799	-131.05	-28.	24.1428	3.97054	131.7	-2.63982	2.96589
800	-131.057	-28.	24.6461	3.92739	131.7	-2.61083	2.93393
801	-131.064	-28.	25.1493	3.88376	131.7	-2.58154	2.9016
802	-131.071	-28.	25.6525	3.83966	131.7	-2.55192	2.86891
803	-131.077	-28.	26.1558	3.79509	131.6	-2.52201	2.83587
804	-131.084	-28.	26.659	3.75006	131.6	-2.4918	2.80248
805	-131.091	-28.	27.1623	3.70457	131.6	-2.46129	2.76874
806	-131.098	-28.	27.6655	3.65863	131.6	-2.43048	2.73465
807	-131.105	-28.	28.1688	3.61223	131.6	-2.39938	2.70022
808	-131.112	-28.	28.672	3.5654	131.6	-2.368	2.66546
809	-131.119	-28.	29.1753	3.51814	131.6	-2.33633	2.63037
810	-131.126	-28.	29.6785	3.47045	131.6	-2.30439	2.59495
811	-131.133	-28.	30.1818	3.42232	131.6	-2.27218	2.5592
812	-131.14	-28.	30.685	3.37379	131.6	-2.23969	2.52314
813	-131.147	-28.	31.1882	3.32484	131.6	-2.20694	2.48676
814	-131.154	-28.	31.6915	3.27548	131.6	-2.17393	2.45006
815	-131.161	-28.	32.1947	3.22573	131.6	-2.14067	2.41307
816	-131.168	-28.	32.698	3.17558	131.6	-2.10714	2.37577

817	-131.175	-28.	33.2012	3.12505	131.6	-2.07338	2.33816
818	-131.182	-28.	33.7045	3.07413	131.6	-2.03937	2.30027
819	-131.189	-28.	34.2077	3.02284	131.6	-2.00512	2.26209
820	-131.196	-28.	34.711	2.97118	131.5	-1.97064	2.22362
821	-131.203	-28.	35.2142	2.91916	131.5	-1.93593	2.18487
822	-131.209	-28.	35.7175	2.86679	131.5	-1.90099	2.14585
823	-131.216	-28.	36.2207	2.81406	131.5	-1.86584	2.10656
824	-131.223	-28.	36.7239	2.76099	131.5	-1.83046	2.067
825	-131.23	-28.	37.2272	2.70758	131.5	-1.79487	2.02717
826	-131.237	-28.	37.7304	2.65384	131.5	-1.75908	1.98708
827	-131.244	-28.	38.2337	2.59977	131.5	-1.72308	1.94674
828	-131.251	-28.	38.7369	2.54539	131.5	-1.68688	1.90616
829	-131.258	-28.	39.2402	2.49069	131.5	-1.65049	1.86532
830	-131.265	-28.	39.7434	2.43568	131.5	-1.61389	1.82425
831	-131.272	-28.	40.2467	2.38037	131.5	-1.57713	1.78293
832	-131.279	-28.	40.7499	2.32476	131.5	-1.54016	1.74138
833	-131.286	-28.	41.2532	2.26885	131.5	-1.50302	1.6996
834	-131.293	-28.	41.7564	2.21267	131.5	-1.46571	1.65759
835	-131.3	-28.	42.2596	2.15619	131.5	-1.42822	1.61535
836	-131.307	-28.	42.7629	2.09944	131.5	-1.39056	1.5729
837	-131.314	-28.	43.2661	2.04241	131.5	-1.35272	1.53022
838	-131.321	-28.	43.7694	1.98512	131.5	-1.31473	1.48734
839	-131.328	-28.	44.2726	1.92756	131.5	-1.27658	1.44424
840	-131.335	-28.	44.7759	1.86973	131.5	-1.23827	1.40093
841	-131.341	-28.	45.2791	1.81165	131.5	-1.1998	1.35741
842	-131.348	-28.	45.7824	1.75331	131.5	-1.16118	1.31369
843	-131.355	-28.	46.2856	1.69472	131.5	-1.1224	1.26976
844	-131.362	-28.	46.7889	1.63587	131.5	-1.08347	1.22563
845	-131.369	-28.	47.2921	1.57677	131.5	-1.04439	1.18129
846	-131.376	-28.	47.7953	1.51742	131.5	-1.00516	1.13675
847	-131.383	-28.	48.2986	1.45781	131.5	-.965774	1.09201
848	-131.39	-28.	48.8018	1.39795	131.5	-.92624	1.04706
849	-131.397	-28.	49.3051	1.33783	131.5	-.88655	1.0019
850	-131.404	-28.	49.8083	1.27744	131.5	-.846705	.956525
851	-131.411	-28.	50.3116	1.21679	131.5	-.806696	.910938
852	-131.418	-28.	50.8148	1.15585	131.5	-.766519	.865118
853	-131.425	-28.	51.3181	1.09462	131.6	-.726164	.819071
854	-131.432	-28.	51.8213	1.03308	131.6	-.685631	.772769
855	-131.439	-28.	52.3246	.971227	131.6	-.6449	.726213
856	-131.446	-28.	52.8278	.909023	131.6	-.603957	.679382
857	-131.453	-28.	53.3311	.846441	131.7	-.562784	.632247
858	-131.46	-28.	53.8343	.783445	131.7	-.521357	.584784
859	-131.467	-28.	54.3375	.719987	131.8	-.479644	.536956
860	-131.473	-28.	54.8408	.656005	131.8	-.437606	.488717
861	-131.48	-28.	55.344	.591421	131.9	-.395191	.440003
862	-131.487	-28.	55.8473	.526125	132.	-.352327	.390735
863	-131.494	-28.	56.3505	.459974	132.2	-.308919	.3408
864	-131.501	-28.	56.8538	.392754	132.4	-.264829	.290037
865	-131.508	-28.	57.357	.324152	132.7	-.219848	.238205
866	-131.515	-28.	57.8603	.253666	133.2	-.173646	.184916
867	-131.522	-28.	58.3635	.180399	134.1	-.12562	.129473
868	-131.529	-28.	58.8668	.102543	136.6	-.0745277	.0704315
END	-131.536	-28.	59.37	.0214665	159.6	-.0201161	7.49E-03
GND	-132.328	-27.086	0	.102798	313.2	.07038	-.0749265
870	-132.328	-27.086	.5	.100116	313.2	.0685391	-.072977
871	-132.328	-27.086	1.	.0919585	313.2	.062942	-.0670423
872	-132.328	-27.086	1.5	.0725698	313.2	.0496564	-.0529209
END	-132.328	-27.086	2.	.102078	313.2	.0698269	-.0744584
2J30	-132.328	-27.086	2.	5.34271	131.6	-3.54488	3.99729
874	-132.325	-27.092	2.50325	5.32192	131.6	-3.53068	3.9821
875	-132.321	-27.098	3.00649	5.29962	131.6	-3.51546	3.9658
876	-132.318	-27.104	3.50974	5.27731	131.5	-3.50024	3.94948
877	-132.314	-27.11	4.01298	5.25499	131.5	-3.48503	3.93313

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

878	-132.311	-27.116	4.51623	5.23257	131.5	-3.46976	3.9167
879	-132.307	-27.1221	5.01947	5.21	131.5	-3.4544	3.90015
880	-132.304	-27.1281	5.52272	5.18719	131.5	-3.4389	3.88341
881	-132.3	-27.1341	6.02596	5.1641	131.5	-3.42321	3.86646
882	-132.297	-27.1401	6.52921	5.14067	131.5	-3.40731	3.84925
883	-132.293	-27.1461	7.03246	5.11687	131.5	-3.39117	3.83175
884	-132.29	-27.1521	7.5357	5.09266	131.5	-3.37476	3.81395
885	-132.286	-27.1581	8.03895	5.06802	131.5	-3.35806	3.79582
886	-132.283	-27.1641	8.54219	5.04291	131.5	-3.34106	3.77734
887	-132.279	-27.1701	9.04544	5.01734	131.5	-3.32375	3.7585
888	-132.276	-27.1761	9.54868	4.99126	131.5	-3.30612	3.73929
889	-132.272	-27.1821	10.0519	4.96469	131.5	-3.28816	3.7197
890	-132.269	-27.1882	10.5552	4.9376	131.5	-3.26985	3.69973
891	-132.265	-27.1942	11.0584	4.90999	131.5	-3.2512	3.67936
892	-132.262	-27.2002	11.5617	4.88185	131.5	-3.2322	3.65859
893	-132.259	-27.2062	12.0649	4.85317	131.5	-3.21285	3.63743
894	-132.255	-27.2122	12.5682	4.82396	131.4	-3.19314	3.61586
895	-132.252	-27.2182	13.0714	4.7942	131.4	-3.17308	3.59387
896	-132.248	-27.2242	13.5746	4.7639	131.4	-3.15265	3.57149
897	-132.245	-27.2302	14.0779	4.73305	131.4	-3.13187	3.54868
898	-132.241	-27.2362	14.5811	4.70166	131.4	-3.11073	3.52548
899	-132.238	-27.2422	15.0844	4.66971	131.4	-3.08922	3.50185
900	-132.234	-27.2482	15.5876	4.63723	131.4	-3.06735	3.47782
901	-132.231	-27.2542	16.0909	4.60418	131.4	-3.04512	3.45336
902	-132.227	-27.2603	16.5941	4.5706	131.4	-3.02254	3.4285
903	-132.224	-27.2663	17.0974	4.53647	131.4	-2.99959	3.40324
904	-132.22	-27.2723	17.6006	4.50179	131.4	-2.97629	3.37756
905	-132.217	-27.2783	18.1039	4.46658	131.4	-2.95262	3.35147
906	-132.213	-27.2843	18.6071	4.43082	131.4	-2.92861	3.32497
907	-132.21	-27.2903	19.1103	4.39454	131.4	-2.90424	3.29808
908	-132.206	-27.2963	19.6136	4.35771	131.4	-2.87952	3.27078
909	-132.203	-27.3023	20.1168	4.32036	131.4	-2.85445	3.24308
910	-132.199	-27.3083	20.6201	4.28248	131.3	-2.82905	3.21499
911	-132.196	-27.3143	21.1233	4.24408	131.3	-2.80329	3.1865
912	-132.193	-27.3203	21.6266	4.20516	131.3	-2.77719	3.15762
913	-132.189	-27.3264	22.1298	4.16572	131.3	-2.75076	3.12835
914	-132.186	-27.3324	22.6331	4.12577	131.3	-2.724	3.09869
915	-132.182	-27.3384	23.1363	4.08532	131.3	-2.6969	3.06864
916	-132.179	-27.3444	23.6396	4.04436	131.3	-2.66947	3.03822
917	-132.175	-27.3504	24.1428	4.0029	131.3	-2.64172	3.00742
918	-132.172	-27.3564	24.6461	3.96095	131.3	-2.61364	2.97624
919	-132.168	-27.3624	25.1493	3.91852	131.3	-2.58525	2.9447
920	-132.165	-27.3684	25.6525	3.87559	131.3	-2.55654	2.91279
921	-132.161	-27.3744	26.1558	3.83219	131.3	-2.52752	2.88051
922	-132.158	-27.3804	26.659	3.78832	131.3	-2.49819	2.84788
923	-132.154	-27.3864	27.1623	3.74398	131.2	-2.46856	2.81488
924	-132.151	-27.3924	27.6655	3.69917	131.2	-2.43863	2.78154
925	-132.147	-27.3985	28.1688	3.65392	131.2	-2.40841	2.74785
926	-132.144	-27.4045	28.672	3.60821	131.2	-2.37789	2.71382
927	-132.14	-27.4105	29.1753	3.56206	131.2	-2.34709	2.67945
928	-132.137	-27.4165	29.6785	3.51546	131.2	-2.316	2.64474
929	-132.133	-27.4225	30.1818	3.46844	131.2	-2.28463	2.6097
930	-132.13	-27.4285	30.685	3.42098	131.2	-2.25298	2.57433
931	-132.127	-27.4345	31.1882	3.3731	131.2	-2.22106	2.53864
932	-132.123	-27.4405	31.6915	3.32481	131.2	-2.18888	2.50263
933	-132.12	-27.4465	32.1947	3.27609	131.2	-2.15642	2.4663
934	-132.116	-27.4525	32.698	3.22698	131.2	-2.12371	2.42966
935	-132.113	-27.4585	33.2012	3.17747	131.1	-2.09075	2.39271
936	-132.109	-27.4646	33.7045	3.12756	131.1	-2.05753	2.35546
937	-132.106	-27.4706	34.2077	3.07727	131.1	-2.02407	2.31791
938	-132.102	-27.4766	34.711	3.02658	131.1	-1.99035	2.28007
939	-132.099	-27.4826	35.2142	2.97553	131.1	-1.9564	2.24193
940	-132.095	-27.4886	35.7175	2.92411	131.1	-1.92222	2.20352

941	-132.092	-27.4946	36.2207	2.87232	131.1	-1.88781	2.16482
942	-132.088	-27.5006	36.7239	2.82018	131.1	-1.85317	2.12583
943	-132.085	-27.5066	37.2272	2.76768	131.1	-1.81831	2.08658
944	-132.081	-27.5126	37.7304	2.71483	131.1	-1.78322	2.04705
945	-132.078	-27.5186	38.2337	2.66164	131.	-1.74792	2.00727
946	-132.074	-27.5246	38.7369	2.60813	131.	-1.71242	1.96722
947	-132.071	-27.5306	39.2402	2.55427	131.	-1.6767	1.92691
948	-132.067	-27.5367	39.7434	2.5001	131.	-1.64079	1.88636
949	-132.064	-27.5427	40.2467	2.44561	131.	-1.60467	1.84554
950	-132.061	-27.5487	40.7499	2.3908	131.	-1.56836	1.80449
951	-132.057	-27.5547	41.2532	2.33569	131.	-1.53186	1.76319
952	-132.054	-27.5607	41.7564	2.28028	131.	-1.49517	1.72167
953	-132.05	-27.5667	42.2596	2.22456	131.	-1.4583	1.6799
954	-132.047	-27.5727	42.7629	2.16856	130.9	-1.42124	1.6379
955	-132.043	-27.5787	43.2661	2.11227	130.9	-1.38401	1.59567
956	-132.04	-27.5847	43.7694	2.05568	130.9	-1.34661	1.55322
957	-132.036	-27.5907	44.2726	1.99882	130.9	-1.30903	1.51054
958	-132.033	-27.5967	44.7759	1.94168	130.9	-1.27128	1.46764
959	-132.029	-27.6028	45.2791	1.88427	130.9	-1.23336	1.42453
960	-132.026	-27.6088	45.7824	1.82658	130.9	-1.19528	1.3812
961	-132.022	-27.6148	46.2856	1.76863	130.9	-1.15703	1.33766
962	-132.019	-27.6208	46.7889	1.7104	130.8	-1.11862	1.29389
963	-132.015	-27.6268	47.2921	1.65191	130.8	-1.08005	1.24992
964	-132.012	-27.6328	47.7953	1.59314	130.8	-1.04131	1.20572
965	-132.008	-27.6388	48.2986	1.53411	130.8	-1.00241	1.16132
966	-132.005	-27.6448	48.8018	1.4748	130.8	-.963342	1.11669
967	-132.001	-27.6508	49.3051	1.41521	130.8	-.924112	1.07184
968	-131.998	-27.6568	49.8083	1.35535	130.7	-.884712	1.02677
969	-131.995	-27.6628	50.3116	1.29519	130.7	-.845135	.981465
970	-131.991	-27.6688	50.8148	1.23474	130.7	-.805374	.93592
971	-131.988	-27.6749	51.3181	1.17398	130.7	-.76543	.890135
972	-131.984	-27.6809	51.8213	1.11289	130.7	-.725287	.844088
973	-131.981	-27.6869	52.3246	1.05147	130.6	-.68494	.797773
974	-131.977	-27.6929	52.8278	.989671	130.6	-.644365	.75116
975	-131.974	-27.6989	53.3311	.927484	130.6	-.603547	.704242
976	-131.97	-27.7049	53.8343	.864861	130.6	-.562462	.656979
977	-131.967	-27.7109	54.3375	.801757	130.5	-.521077	.609338
978	-131.963	-27.7169	54.8408	.738111	130.5	-.479355	.561273
979	-131.96	-27.7229	55.344	.673841	130.5	-.43724	.512721
980	-131.956	-27.7289	55.8473	.60884	130.4	-.394664	.463602
981	-131.953	-27.7349	56.3505	.542959	130.3	-.35153	.413801
982	-131.949	-27.741	56.8538	.475987	130.3	-.3077	.363158
983	-131.946	-27.747	57.357	.407606	130.2	-.262966	.311434
984	-131.942	-27.753	57.8603	.337303	130.	-.216995	.258238
985	-131.939	-27.759	58.3635	.264165	129.8	-.169189	.202875
986	-131.935	-27.765	58.8668	.186283	129.4	-.1183	.143897
END	-131.932	-27.771	59.37	.103286	128.3	-.0640792	.0810056
GND	-132.328	-28.914	0	.102689	313.2	.0702948	-.0748572
988	-132.328	-28.914	.5	.10001	313.2	.0684553	-.0729098
989	-132.328	-28.914	1.	.0918602	313.2	.0628629	-.0669817
990	-132.328	-28.914	1.5	.0724921	313.2	.0495913	-.0528754
END	-132.328	-28.914	2.	.101964	313.1	.0697281	-.0743947
2J32	-132.328	-28.914	2.	5.3117	131.5	-3.51757	3.98006
992	-132.325	-28.908	2.50325	5.29093	131.5	-3.50338	3.96487
993	-132.321	-28.902	3.00649	5.26866	131.5	-3.48819	3.94858
994	-132.318	-28.896	3.50974	5.24638	131.5	-3.47301	3.93227
995	-132.314	-28.89	4.01298	5.22408	131.4	-3.45783	3.91593
996	-132.311	-28.884	4.51623	5.20169	131.4	-3.44259	3.8995
997	-132.307	-28.8779	5.01947	5.17914	131.4	-3.42727	3.88295
998	-132.304	-28.8719	5.52272	5.15636	131.4	-3.41181	3.86622
999	-132.3	-28.8659	6.02596	5.1333	131.4	-3.39616	3.84927
1000	-132.297	-28.8599	6.52921	5.1099	131.4	-3.38031	3.83206
1001	-132.293	-28.8539	7.03246	5.08613	131.4	-3.3642	3.81456

1002	-132.29	-28.8479	7.5357	5.06195	131.4	-3.34783	3.79676
1003	-132.286	-28.8419	8.03895	5.03733	131.4	-3.33118	3.77862
1004	-132.283	-28.8359	8.54219	5.01226	131.4	-3.31423	3.76014
1005	-132.279	-28.8299	9.04544	4.98671	131.4	-3.29697	3.74129
1006	-132.276	-28.8239	9.54868	4.96066	131.4	-3.27938	3.72207
1007	-132.272	-28.8179	10.0519	4.93411	131.4	-3.26146	3.70247
1008	-132.269	-28.8118	10.5552	4.90704	131.4	-3.2432	3.68248
1009	-132.265	-28.8058	11.0584	4.87946	131.4	-3.22461	3.6621
1010	-132.262	-28.7998	11.5617	4.85133	131.4	-3.20566	3.64131
1011	-132.259	-28.7938	12.0649	4.82267	131.4	-3.18635	3.62013
1012	-132.255	-28.7878	12.5682	4.79348	131.3	-3.1667	3.59853
1013	-132.252	-28.7818	13.0714	4.76375	131.3	-3.14669	3.57654
1014	-132.248	-28.7758	13.5746	4.73347	131.3	-3.12632	3.55413
1015	-132.245	-28.7698	14.0779	4.70264	131.3	-3.10559	3.53131
1016	-132.241	-28.7638	14.5811	4.67128	131.3	-3.08452	3.50808
1017	-132.238	-28.7578	15.0844	4.63936	131.3	-3.06307	3.48443
1018	-132.234	-28.7518	15.5876	4.60691	131.3	-3.04127	3.46039
1019	-132.231	-28.7458	16.0909	4.5739	131.3	-3.01912	3.43592
1020	-132.227	-28.7397	16.5941	4.54035	131.3	-2.99659	3.41104
1021	-132.224	-28.7337	17.0974	4.50626	131.3	-2.97372	3.38576
1022	-132.22	-28.7277	17.6006	4.47162	131.3	-2.95048	3.36006
1023	-132.217	-28.7217	18.1039	4.43645	131.3	-2.9269	3.33396
1024	-132.213	-28.7157	18.6071	4.40073	131.3	-2.90297	3.30745
1025	-132.21	-28.7097	19.1103	4.36448	131.3	-2.87868	3.28054
1026	-132.206	-28.7037	19.6136	4.3277	131.3	-2.85404	3.25322
1027	-132.203	-28.6977	20.1168	4.2904	131.3	-2.82906	3.22551
1028	-132.199	-28.6917	20.6201	4.25256	131.2	-2.80373	3.19741
1029	-132.196	-28.6857	21.1233	4.21421	131.2	-2.77806	3.1689
1030	-132.193	-28.6797	21.6266	4.17533	131.2	-2.75205	3.14
1031	-132.189	-28.6736	22.1298	4.13594	131.2	-2.72571	3.11071
1032	-132.186	-28.6676	22.6331	4.09605	131.2	-2.69903	3.08104
1033	-132.182	-28.6616	23.1363	4.05564	131.2	-2.67202	3.05098
1034	-132.179	-28.6556	23.6396	4.01474	131.2	-2.64469	3.02055
1035	-132.175	-28.6496	24.1428	3.97332	131.2	-2.61703	2.98973
1036	-132.172	-28.6436	24.6461	3.93143	131.2	-2.58905	2.95854
1037	-132.168	-28.6376	25.1493	3.88904	131.2	-2.56075	2.92698
1038	-132.165	-28.6316	25.6525	3.84617	131.2	-2.53214	2.89505
1039	-132.161	-28.6256	26.1558	3.80283	131.2	-2.50321	2.86277
1040	-132.158	-28.6196	26.659	3.75901	131.2	-2.47398	2.83012
1041	-132.154	-28.6136	27.1623	3.71472	131.2	-2.44445	2.79711
1042	-132.151	-28.6076	27.6655	3.66998	131.1	-2.41462	2.76376
1043	-132.147	-28.6015	28.1688	3.62478	131.1	-2.38449	2.73006
1044	-132.144	-28.5955	28.672	3.57912	131.1	-2.35407	2.696
1045	-132.14	-28.5895	29.1753	3.53302	131.1	-2.32337	2.66162
1046	-132.137	-28.5835	29.6785	3.48649	131.1	-2.29238	2.6269
1047	-132.133	-28.5775	30.1818	3.43951	131.1	-2.26111	2.59184
1048	-132.13	-28.5715	30.685	3.39211	131.1	-2.22957	2.55645
1049	-132.127	-28.5655	31.1882	3.3443	131.1	-2.19775	2.52075
1050	-132.123	-28.5595	31.6915	3.29606	131.1	-2.16567	2.48473
1051	-132.12	-28.5535	32.1947	3.24741	131.1	-2.13332	2.44839
1052	-132.116	-28.5475	32.698	3.19836	131.1	-2.10072	2.41174
1053	-132.113	-28.5415	33.2012	3.14891	131.	-2.06786	2.37478
1054	-132.109	-28.5354	33.7045	3.09907	131.	-2.03475	2.33752
1055	-132.106	-28.5294	34.2077	3.04883	131.	-2.00139	2.29996
1056	-132.102	-28.5234	34.711	2.99822	131.	-1.96779	2.26211
1057	-132.099	-28.5174	35.2142	2.94724	131.	-1.93395	2.22397
1058	-132.095	-28.5114	35.7175	2.89588	131.	-1.89988	2.18554
1059	-132.092	-28.5054	36.2207	2.84416	131.	-1.86558	2.14683
1060	-132.088	-28.4994	36.7239	2.79209	131.	-1.83104	2.10785
1061	-132.085	-28.4934	37.2272	2.73966	131.	-1.79629	2.06859
1062	-132.081	-28.4874	37.7304	2.68689	131.	-1.76132	2.02907
1063	-132.078	-28.4814	38.2337	2.63377	130.9	-1.72613	1.98927
1064	-132.074	-28.4754	38.7369	2.58032	130.9	-1.69074	1.94922

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

1065	-132.071	-28.4694	39.2402	2.52654	130.9	-1.65513	1.90891
1066	-132.067	-28.4633	39.7434	2.47245	130.9	-1.61933	1.86835
1067	-132.064	-28.4573	40.2467	2.41802	130.9	-1.58333	1.82754
1068	-132.061	-28.4513	40.7499	2.36329	130.9	-1.54713	1.78649
1069	-132.057	-28.4453	41.2532	2.30825	130.9	-1.51073	1.74519
1070	-132.054	-28.4393	41.7564	2.2529	130.9	-1.47416	1.70366
1071	-132.05	-28.4333	42.2596	2.19726	130.9	-1.43739	1.66189
1072	-132.047	-28.4273	42.7629	2.14133	130.8	-1.40045	1.61988
1073	-132.043	-28.4213	43.2661	2.0851	130.8	-1.36332	1.57766
1074	-132.04	-28.4153	43.7694	2.02859	130.8	-1.32602	1.5352
1075	-132.036	-28.4093	44.2726	1.9718	130.8	-1.28855	1.49253
1076	-132.033	-28.4033	44.7759	1.91473	130.8	-1.25091	1.44963
1077	-132.029	-28.3972	45.2791	1.85739	130.8	-1.2131	1.40651
1078	-132.026	-28.3912	45.7824	1.79977	130.8	-1.17512	1.36318
1079	-132.022	-28.3852	46.2856	1.74189	130.7	-1.13698	1.31964
1080	-132.019	-28.3792	46.7889	1.68373	130.7	-1.09868	1.27588
1081	-132.015	-28.3732	47.2921	1.62531	130.7	-1.06021	1.2319
1082	-132.012	-28.3672	47.7953	1.56661	130.7	-1.02157	1.18771
1083	-132.008	-28.3612	48.2986	1.50766	130.7	-.98278	1.14331
1084	-132.005	-28.3552	48.8018	1.44842	130.7	-.943819	1.09869
1085	-132.001	-28.3492	49.3051	1.38891	130.6	-.904694	1.05385
1086	-131.998	-28.3432	49.8083	1.32912	130.6	-.865393	1.00879
1087	-131.995	-28.3372	50.3116	1.26904	130.6	-.825923	.96349
1088	-131.991	-28.3312	50.8148	1.20867	130.6	-.786275	.91796
1089	-131.988	-28.3251	51.3181	1.14798	130.6	-.74643	.872182
1090	-131.984	-28.3191	51.8213	1.08698	130.5	-.706395	.826149
1091	-131.981	-28.3131	52.3246	1.02563	130.5	-.666148	.779848
1092	-131.977	-28.3071	52.8278	.963912	130.5	-.625677	.733249
1093	-131.974	-28.3011	53.3311	.901804	130.4	-.584962	.686345
1094	-131.97	-28.2951	53.8343	.839261	130.4	-.543978	.639098
1095	-131.967	-28.2891	54.3375	.776238	130.4	-.502697	.591474
1096	-131.963	-28.2831	54.8408	.712673	130.3	-.461076	.543426
1097	-131.96	-28.2771	55.344	.648486	130.3	-.419064	.494894
1098	-131.956	-28.2711	55.8473	.583567	130.2	-.376588	.445793
1099	-131.953	-28.2651	56.3505	.51777	130.1	-.333555	.396013
1100	-131.949	-28.259	56.8538	.450882	130.	-.289826	.345392
1101	-131.946	-28.253	57.357	.382588	129.9	-.245192	.293691
1102	-131.942	-28.247	57.8603	.312374	129.6	-.199321	.240518
1103	-131.939	-28.241	58.3635	.239328	129.3	-.151614	.185179
1104	-131.935	-28.235	58.8668	.161551	128.6	-.100824	.126226
END	-131.932	-28.229	59.37	.0787156	126.4	-.0467047	.0633626
2J27	-131.8	-28.	2.	5.5108	131.9	-3.68245	4.09981
1106	-131.272	-28.	2.	5.49599	131.9	-3.67231	4.08902
END	-130.744	-28.	2.	5.47573	131.9	-3.65845	4.07423
2J27	-131.8	-28.	2.	5.47862	131.6	-3.63789	4.09647
1109	-132.064	-27.543	2.	5.46351	131.6	-3.62755	4.08544
END	-132.328	-27.086	2.	5.44474	131.6	-3.6147	4.07175
2J27	-131.8	-28.	2.	5.44748	131.5	-3.61046	4.07917
1112	-132.064	-28.457	2.	5.43237	131.5	-3.60012	4.06814
END	-132.328	-28.914	2.	5.41362	131.5	-3.5873	4.05445
2J29	-131.536	-28.	59.37	7.43E-03	172.1	-7.36E-03	1.03E-03
END	-131.932	-27.771	59.37	.0614856	306.2	.0363323	-.0496029
2J31	-131.932	-27.771	59.37	.0419049	131.5	-.0277469	.0314027
END	-131.932	-28.229	59.37	.0249136	309.5	.0158355	-.0192334
2J33	-131.932	-28.229	59.37	.0538544	125.	-.0308693	.0441292
END	-131.536	-28.	59.37	.0142994	333.1	.012754	-6.47E-03
GND	8.2	126.1	0	12.5755	218.2	-9.87942	-7.7808
1121	8.2	126.1	.5	12.5819	218.	-9.91718	-7.74297
1122	8.2	126.1	1.	12.5849	217.8	-9.94129	-7.71695
1123	8.2	126.1	1.5	12.5861	217.7	-9.95855	-7.69651
END	8.2	126.1	2.	12.5862	217.6	-9.96733	-7.68533
GND	9.256	126.1	0	.109373	125.7	-.063779	.0888516
1125	9.256	126.1	.5	.106153	125.5	-.0616719	.0864007

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

1126	9.256	126.1	1.	.0965574	125.1	-.0554953	.0790164
1127	9.256	126.1	1.5	.0749389	124.3	-.0422444	.0618971
END	9.256	126.1	2.	.103693	123.5	-.0572898	.0864298
2J41	9.256	126.1	2.	4.20107	216.6	-3.37159	-2.50626
1129	9.24905	126.1	2.50325	4.19841	216.4	-3.38076	-2.48941
1130	9.2421	126.1	3.00649	4.19485	216.1	-3.3893	-2.47173
1131	9.23516	126.1	3.50974	4.1906	215.9	-3.3966	-2.45443
1132	9.22821	126.1	4.01298	4.18567	215.6	-3.40271	-2.43749
1133	9.22126	126.1	4.51623	4.18007	215.4	-3.40771	-2.42085
1134	9.21432	126.1	5.01947	4.17381	215.2	-3.41164	-2.40445
1135	9.20737	126.1	5.52272	4.16688	215.	-3.41459	-2.38821
1136	9.20042	126.1	6.02596	4.1593	214.8	-3.41657	-2.37209
1137	9.19347	126.1	6.52921	4.15105	214.6	-3.41764	-2.35605
1138	9.18653	126.1	7.03246	4.14213	214.4	-3.41782	-2.34004
1139	9.17958	126.1	7.5357	4.13255	214.2	-3.41714	-2.32404
1140	9.17263	126.1	8.03895	4.1223	214.	-3.41562	-2.30801
1141	9.16568	126.1	8.54219	4.11139	213.9	-3.41328	-2.29195
1142	9.15874	126.1	9.04544	4.09982	213.7	-3.41014	-2.27584
1143	9.15179	126.1	9.54868	4.08758	213.6	-3.40621	-2.25965
1144	9.14484	126.1	10.0519	4.07467	213.4	-3.4015	-2.24338
1145	9.13789	126.1	10.5552	4.0611	213.3	-3.39602	-2.22702
1146	9.13095	126.1	11.0584	4.04687	213.1	-3.38978	-2.21055
1147	9.124	126.1	11.5617	4.03198	213.	-3.3828	-2.19398
1148	9.11705	126.1	12.0649	4.01644	212.8	-3.37508	-2.17729
1149	9.1101	126.1	12.5682	4.00024	212.7	-3.36664	-2.16048
1150	9.10316	126.1	13.0714	3.98339	212.6	-3.35747	-2.14355
1151	9.09621	126.1	13.5746	3.96588	212.4	-3.34757	-2.12648
1152	9.08926	126.1	14.0779	3.94773	212.3	-3.33698	-2.10929
1153	9.08232	126.1	14.5811	3.92892	212.2	-3.32567	-2.09196
1154	9.07537	126.1	15.0844	3.90947	212.	-3.31368	-2.07449
1155	9.06842	126.1	15.5876	3.88939	211.9	-3.30099	-2.05689
1156	9.06147	126.1	16.0909	3.86865	211.8	-3.28761	-2.03914
1157	9.05453	126.1	16.5941	3.84728	211.7	-3.27355	-2.02125
1158	9.04758	126.1	17.0974	3.82528	211.6	-3.25882	-2.00322
1159	9.04063	126.1	17.6006	3.80265	211.5	-3.24341	-1.98505
1160	9.03368	126.1	18.1039	3.77938	211.4	-3.22734	-1.96673
1161	9.02674	126.1	18.6071	3.75549	211.3	-3.2106	-1.94827
1162	9.01979	126.1	19.1103	3.73098	211.1	-3.19321	-1.92967
1163	9.01284	126.1	19.6136	3.70585	211.	-3.17517	-1.91092
1164	9.00589	126.1	20.1168	3.6801	210.9	-3.15649	-1.89203
1165	8.99895	126.1	20.6201	3.65375	210.8	-3.13716	-1.873
1166	8.992	126.1	21.1233	3.62679	210.7	-3.1172	-1.85383
1167	8.98505	126.1	21.6266	3.59922	210.6	-3.09661	-1.83451
1168	8.9781	126.1	22.1298	3.57105	210.5	-3.07538	-1.81506
1169	8.97116	126.1	22.6331	3.5423	210.5	-3.05354	-1.79547
1170	8.96421	126.1	23.1363	3.51294	210.4	-3.03109	-1.77574
1171	8.95726	126.1	23.6396	3.483	210.3	-3.00802	-1.75588
1172	8.95032	126.1	24.1428	3.45247	210.2	-2.98434	-1.73588
1173	8.94337	126.1	24.6461	3.42137	210.1	-2.96006	-1.71575
1174	8.93642	126.1	25.1493	3.3897	210.	-2.9352	-1.69549
1175	8.92947	126.1	25.6525	3.35745	209.9	-2.90973	-1.6751
1176	8.92253	126.1	26.1558	3.32464	209.8	-2.88368	-1.65457
1177	8.91558	126.1	26.659	3.29127	209.8	-2.85705	-1.63393
1178	8.90863	126.1	27.1623	3.25735	209.7	-2.82984	-1.61316
1179	8.90168	126.1	27.6655	3.22287	209.6	-2.80207	-1.59226
1180	8.89474	126.1	28.1688	3.18784	209.5	-2.77372	-1.57125
1181	8.88779	126.1	28.672	3.15228	209.5	-2.74482	-1.55011
1182	8.88084	126.1	29.1753	3.11619	209.4	-2.71536	-1.52887
1183	8.87389	126.1	29.6785	3.07956	209.3	-2.68535	-1.5075
1184	8.86695	126.1	30.1818	3.0424	209.2	-2.6548	-1.48602
1185	8.86	126.1	30.685	3.00473	209.2	-2.62371	-1.46443
1186	8.85305	126.1	31.1882	2.96654	209.1	-2.59208	-1.44273
1187	8.8461	126.1	31.6915	2.92783	209.	-2.55992	-1.42093

1188	8.83916	126.1	32.1947	2.88863	209.	-2.52724	-1.39901
1189	8.83221	126.1	32.698	2.84892	208.9	-2.49403	-1.377
1190	8.82526	126.1	33.2012	2.80872	208.8	-2.46032	-1.35489
1191	8.81832	126.1	33.7045	2.76802	208.8	-2.42609	-1.33267
1192	8.81137	126.1	34.2077	2.72685	208.7	-2.39137	-1.31036
1193	8.80442	126.1	34.711	2.68519	208.7	-2.35614	-1.28796
1194	8.79747	126.1	35.2142	2.64305	208.6	-2.32042	-1.26546
1195	8.79053	126.1	35.7175	2.60045	208.6	-2.28421	-1.24288
1196	8.78358	126.1	36.2207	2.55739	208.5	-2.24752	-1.2202
1197	8.77663	126.1	36.7239	2.51387	208.4	-2.21035	-1.19744
1198	8.76968	126.1	37.2272	2.46989	208.4	-2.17271	-1.1746
1199	8.76274	126.1	37.7304	2.42547	208.3	-2.13461	-1.15167
1200	8.75579	126.1	38.2337	2.38061	208.3	-2.09604	-1.12867
1201	8.74884	126.1	38.7369	2.33531	208.3	-2.05702	-1.10559
1202	8.74189	126.1	39.2402	2.28957	208.2	-2.01754	-1.08243
1203	8.73495	126.1	39.7434	2.24341	208.2	-1.97762	-1.0592
1204	8.728	126.1	40.2467	2.19683	208.1	-1.93726	-1.03591
1205	8.72105	126.1	40.7499	2.14982	208.1	-1.89645	-1.01254
1206	8.7141	126.1	41.2532	2.10241	208.1	-1.85522	-.989095
1207	8.70716	126.1	41.7564	2.05459	208.	-1.81355	-.965591
1208	8.70021	126.1	42.2596	2.00636	208.	-1.77146	-.942023
1209	8.69326	126.1	42.7629	1.95774	208.	-1.72896	-.918398
1210	8.68632	126.1	43.2661	1.90871	208.	-1.68603	-.89471
1211	8.67937	126.1	43.7694	1.8593	207.9	-1.64269	-.870958
1212	8.67242	126.1	44.2726	1.8095	207.9	-1.59895	-.84715
1213	8.66547	126.1	44.7759	1.75931	207.9	-1.55479	-.823285
1214	8.65853	126.1	45.2791	1.70875	207.9	-1.51024	-.799371
1215	8.65158	126.1	45.7824	1.6578	207.9	-1.46528	-.7754
1216	8.64463	126.1	46.2856	1.60647	207.9	-1.41993	-.751372
1217	8.63768	126.1	46.7889	1.55477	207.9	-1.37418	-.727288
1218	8.63074	126.1	47.2921	1.5027	207.9	-1.32803	-.703154
1219	8.62379	126.1	47.7953	1.45024	207.9	-1.28148	-.678965
1220	8.61684	126.1	48.2986	1.39741	207.9	-1.23455	-.654722
1221	8.60989	126.1	48.8018	1.3442	208.	-1.1872	-.630424
1222	8.60295	126.1	49.3051	1.29061	208.	-1.13945	-.606068
1223	8.596	126.1	49.8083	1.23664	208.1	-1.09131	-.581654
1224	8.58905	126.1	50.3116	1.18227	208.1	-1.04274	-.557177
1225	8.5821	126.1	50.8148	1.1275	208.2	-.993762	-.532636
1226	8.57516	126.1	51.3181	1.07233	208.3	-.944349	-.508024
1227	8.56821	126.1	51.8213	1.01673	208.4	-.894498	-.483337
1228	8.56126	126.1	52.3246	.960695	208.5	-.844187	-.458566
1229	8.55432	126.1	52.8278	.904205	208.7	-.793403	-.433704
1230	8.54737	126.1	53.3311	.847226	208.8	-.742109	-.408737
1231	8.54042	126.1	53.8343	.789732	209.1	-.69028	-.383652
1232	8.53347	126.1	54.3375	.731682	209.3	-.637876	-.358431
1233	8.52653	126.1	54.8408	.673024	209.7	-.584841	-.33305
1234	8.51958	126.1	55.344	.61369	210.1	-.531107	-.307476
1235	8.51263	126.1	55.8473	.553591	210.6	-.476578	-.281668
1236	8.50568	126.1	56.3505	.492608	211.3	-.421126	-.25557
1237	8.49874	126.1	56.8538	.430575	212.1	-.364567	-.229098
1238	8.49179	126.1	57.357	.367254	213.4	-.306625	-.202131
1239	8.48484	126.1	57.8603	.302287	215.3	-.246855	-.17447
1240	8.47789	126.1	58.3635	.2351	218.3	-.184462	-.14576
1241	8.47095	126.1	58.8668	.164801	224.4	-.117788	-.115262
END	8.464	126.1	59.37	.0949774	240.7	-.0464674	-.082834
GND	7.672	127.014	0	.108995	125.7	-.0635789	.0885306
1243	7.672	127.014	.5	.105785	125.5	-.061475	.0860889
1244	7.672	127.014	1.	.09622	125.1	-.0553101	.0787343
1245	7.672	127.014	1.5	.0746775	124.3	-.0420932	.0616838
END	7.672	127.014	2.	.103332	123.5	-.0570635	.0861469
2J43	7.672	127.014	2.	4.20289	215.1	-3.43976	-2.41503
1247	7.67547	127.008	2.50325	4.20073	214.8	-3.44887	-2.3982
1248	7.67895	127.002	3.00649	4.19767	214.5	-3.45736	-2.38056

1249	7.68242	126.996	3.50974	4.19387	214.3	-3.46459	-2.36329
1250	7.68589	126.99	4.01298	4.18937	214.1	-3.47064	-2.34638
1251	7.68937	126.984	4.51623	4.18418	213.8	-3.47557	-2.32976
1252	7.69284	126.978	5.01947	4.1783	213.6	-3.47944	-2.31338
1253	7.69632	126.972	5.52272	4.17173	213.4	-3.4823	-2.29716
1254	7.69979	126.966	6.02596	4.16447	213.2	-3.4842	-2.28105
1255	7.70326	126.96	6.52921	4.15654	213.	-3.48518	-2.26502
1256	7.70674	126.954	7.03246	4.14792	212.8	-3.48528	-2.24902
1257	7.71021	126.948	7.5357	4.13861	212.7	-3.4845	-2.23302
1258	7.71368	126.942	8.03895	4.12863	212.5	-3.48289	-2.217
1259	7.71716	126.936	8.54219	4.11796	212.3	-3.48044	-2.20094
1260	7.72063	126.93	9.04544	4.10662	212.1	-3.47719	-2.18482
1261	7.72411	126.924	9.54868	4.09459	212.	-3.47315	-2.16863
1262	7.72758	126.918	10.0519	4.0819	211.8	-3.46833	-2.15234
1263	7.73105	126.912	10.5552	4.06853	211.7	-3.46273	-2.13597
1264	7.73453	126.906	11.0584	4.05448	211.5	-3.45638	-2.11949
1265	7.738	126.9	11.5617	4.03977	211.4	-3.44928	-2.1029
1266	7.74147	126.894	12.0649	4.02438	211.2	-3.44143	-2.08619
1267	7.74495	126.888	12.5682	4.00833	211.1	-3.43284	-2.06936
1268	7.74842	126.882	13.0714	3.99161	210.9	-3.42354	-2.0524
1269	7.75189	126.876	13.5746	3.97423	210.8	-3.4135	-2.03531
1270	7.75537	126.87	14.0779	3.95619	210.7	-3.40276	-2.01808
1271	7.75884	126.864	14.5811	3.9375	210.5	-3.39132	-2.00073
1272	7.76232	126.858	15.0844	3.91816	210.4	-3.37917	-1.98322
1273	7.76579	126.852	15.5876	3.89816	210.3	-3.36632	-1.96558
1274	7.76926	126.846	16.0909	3.87751	210.2	-3.35279	-1.9478
1275	7.77274	126.84	16.5941	3.85623	210.	-3.33857	-1.92987
1276	7.77621	126.834	17.0974	3.83429	209.9	-3.32367	-1.91181
1277	7.77968	126.828	17.6006	3.81172	209.8	-3.3081	-1.89359
1278	7.78316	126.822	18.1039	3.78852	209.7	-3.29187	-1.87523
1279	7.78663	126.816	18.6071	3.76469	209.6	-3.27497	-1.85674
1280	7.79011	126.81	19.1103	3.74023	209.4	-3.25741	-1.83809
1281	7.79358	126.804	19.6136	3.71514	209.3	-3.2392	-1.8193
1282	7.79705	126.798	20.1168	3.68944	209.2	-3.22034	-1.80037
1283	7.80053	126.792	20.6201	3.66311	209.1	-3.20084	-1.7813
1284	7.804	126.786	21.1233	3.63618	209.	-3.1807	-1.76208
1285	7.80747	126.78	21.6266	3.60864	208.9	-3.15994	-1.74272
1286	7.81095	126.774	22.1298	3.58048	208.8	-3.13853	-1.72322
1287	7.81442	126.768	22.6331	3.55173	208.7	-3.11651	-1.70358
1288	7.81789	126.762	23.1363	3.52239	208.6	-3.09386	-1.68381
1289	7.82137	126.756	23.6396	3.49244	208.5	-3.07061	-1.66389
1290	7.82484	126.75	24.1428	3.46191	208.3	-3.04674	-1.64385
1291	7.82832	126.744	24.6461	3.4308	208.2	-3.02227	-1.62367
1292	7.83179	126.738	25.1493	3.39911	208.1	-2.9972	-1.60335
1293	7.83526	126.732	25.6525	3.36684	208.	-2.97153	-1.58291
1294	7.83874	126.726	26.1558	3.334	207.9	-2.94528	-1.56234
1295	7.84221	126.72	26.659	3.3006	207.8	-2.91844	-1.54164
1296	7.84568	126.714	27.1623	3.26663	207.7	-2.89102	-1.52081
1297	7.84916	126.708	27.6655	3.23212	207.6	-2.86304	-1.49987
1298	7.85263	126.702	28.1688	3.19705	207.6	-2.83448	-1.4788
1299	7.85611	126.696	28.672	3.16143	207.5	-2.80536	-1.45761
1300	7.85958	126.69	29.1753	3.12528	207.4	-2.77568	-1.4363
1301	7.86305	126.684	29.6785	3.08859	207.3	-2.74544	-1.41489
1302	7.86653	126.678	30.1818	3.05137	207.2	-2.71466	-1.39336
1303	7.87	126.671	30.685	3.01362	207.1	-2.68335	-1.37171
1304	7.87347	126.665	31.1882	2.97536	207.	-2.65149	-1.34995
1305	7.87695	126.659	31.6915	2.93658	206.9	-2.6191	-1.3281
1306	7.88042	126.653	32.1947	2.8973	206.8	-2.58619	-1.30613
1307	7.88389	126.647	32.698	2.85751	206.7	-2.55275	-1.28407
1308	7.88737	126.641	33.2012	2.81723	206.6	-2.5188	-1.2619
1309	7.89084	126.635	33.7045	2.77645	206.5	-2.48434	-1.23964
1310	7.89432	126.629	34.2077	2.73518	206.4	-2.44938	-1.21729
1311	7.89779	126.623	34.711	2.69343	206.3	-2.41391	-1.19483

1312	7.90126	126.617	35.2142	2.65121	206.2	-2.37795	-1.17229
1313	7.90474	126.611	35.7175	2.60852	206.2	-2.34151	-1.14966
1314	7.90821	126.605	36.2207	2.56536	206.1	-2.30458	-1.12695
1315	7.91168	126.599	36.7239	2.52175	206.	-2.26717	-1.10415
1316	7.91516	126.593	37.2272	2.47767	205.9	-2.22929	-1.08127
1317	7.91863	126.587	37.7304	2.43316	205.8	-2.19094	-1.05831
1318	7.92211	126.581	38.2337	2.38819	205.7	-2.15213	-1.03527
1319	7.92558	126.575	38.7369	2.34278	205.6	-2.11286	-1.01215
1320	7.92905	126.569	39.2402	2.29695	205.5	-2.07314	-.988968
1321	7.93253	126.563	39.7434	2.25068	205.4	-2.03297	-.965704
1322	7.936	126.557	40.2467	2.20398	205.3	-1.99235	-.942376
1323	7.93947	126.551	40.7499	2.15687	205.2	-1.9513	-.918985
1324	7.94295	126.545	41.2532	2.10935	205.1	-1.90982	-.895523
1325	7.94642	126.539	41.7564	2.06142	205.	-1.8679	-.871998
1326	7.94989	126.533	42.2596	2.01308	204.9	-1.82556	-.848416
1327	7.95337	126.527	42.7629	1.96434	204.8	-1.7828	-.82477
1328	7.95684	126.521	43.2661	1.9152	204.7	-1.73963	-.801068
1329	7.96032	126.515	43.7694	1.86567	204.6	-1.69603	-.777309
1330	7.96379	126.509	44.2726	1.81576	204.5	-1.65204	-.753494
1331	7.96726	126.503	44.7759	1.76546	204.4	-1.60763	-.729629
1332	7.97074	126.497	45.2791	1.71477	204.3	-1.56282	-.705709
1333	7.97421	126.491	45.7824	1.66371	204.2	-1.51762	-.681737
1334	7.97768	126.485	46.2856	1.61226	204.1	-1.47201	-.657715
1335	7.98116	126.479	46.7889	1.56044	204.	-1.426	-.633641
1336	7.98463	126.473	47.2921	1.50824	203.8	-1.37959	-.609517
1337	7.98811	126.467	47.7953	1.45566	203.7	-1.33279	-.585343
1338	7.99158	126.461	48.2986	1.40271	203.6	-1.28559	-.561118
1339	7.99505	126.455	48.8018	1.34938	203.4	-1.23799	-.536842
1340	7.99853	126.449	49.3051	1.29566	203.3	-1.18999	-.512511
1341	8.002	126.443	49.8083	1.24156	203.2	-1.14158	-.488126
1342	8.00547	126.437	50.3116	1.18707	203.	-1.09276	-.463684
1343	8.00895	126.431	50.8148	1.13217	202.8	-1.04352	-.439179
1344	8.01242	126.425	51.3181	1.07687	202.6	-.993854	-.414609
1345	8.01589	126.419	51.8213	1.02114	202.5	-.943741	-.389967
1346	8.01937	126.413	52.3246	.964964	202.2	-.893169	-.365246
1347	8.02284	126.407	52.8278	.908333	202.	-.842123	-.340438
1348	8.02632	126.401	53.3311	.851208	201.8	-.790567	-.31553
1349	8.02979	126.395	53.8343	.793568	201.5	-.738482	-.290507
1350	8.03326	126.389	54.3375	.73536	201.2	-.685815	-.265353
1351	8.03674	126.383	54.8408	.676535	200.8	-.632518	-.240042
1352	8.04021	126.377	55.344	.61702	200.3	-.578519	-.214544
1353	8.04368	126.371	55.8473	.556723	199.8	-.523726	-.188817
1354	8.04716	126.365	56.3505	.495516	199.2	-.468008	-.162803
1355	8.05063	126.359	56.8538	.433222	198.4	-.411182	-.136422
1356	8.0541	126.353	57.357	.369581	197.2	-.352972	-.109549
1357	8.05758	126.347	57.8603	.304189	195.6	-.292932	-.0819877
1358	8.06105	126.341	58.3635	.236374	193.1	-.230267	-.053383
1359	8.06453	126.335	58.8668	.164927	188.	-.163316	-.0229951
END	8.068	126.329	59.37	.0921801	174.2	-.0917083	9.31E-03
GND	7.672	125.186	0	.109144	125.8	-.0637911	.088561
1361	7.672	125.186	.5	.105928	125.6	-.0616808	.0861172
1362	7.672	125.186	1.	.0963461	125.2	-.055496	.0787576
1363	7.672	125.186	1.5	.0747683	124.4	-.0422333	.0616981
END	7.672	125.186	2.	.103444	123.6	-.0572544	.086154
2J45	7.672	125.186	2.	4.15724	215.6	-3.37975	-2.42074
1365	7.67547	125.192	2.50325	4.15492	215.4	-3.38888	-2.40392
1366	7.67895	125.198	3.00649	4.1517	215.1	-3.3974	-2.38628
1367	7.68242	125.204	3.50974	4.14776	214.8	-3.40465	-2.36903
1368	7.68589	125.21	4.01298	4.14313	214.6	-3.41072	-2.35213
1369	7.68937	125.216	4.51623	4.1378	214.4	-3.41566	-2.33553
1370	7.69284	125.222	5.01947	4.1318	214.1	-3.41954	-2.31915
1371	7.69632	125.228	5.52272	4.12511	213.9	-3.42242	-2.30295
1372	7.69979	125.234	6.02596	4.11776	213.7	-3.42434	-2.28687

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

1373	7.70326	125.24	6.52921	4.10972	213.5	-3.42534	-2.27086
1374	7.70674	125.246	7.03246	4.101	213.4	-3.42545	-2.25489
1375	7.71021	125.252	7.5357	4.09161	213.2	-3.42469	-2.23892
1376	7.71368	125.258	8.03895	4.08154	213.	-3.42309	-2.22293
1377	7.71716	125.264	8.54219	4.0708	212.8	-3.42067	-2.20691
1378	7.72063	125.27	9.04544	4.05938	212.7	-3.41744	-2.19082
1379	7.72411	125.276	9.54868	4.04729	212.5	-3.41341	-2.17467
1380	7.72758	125.282	10.0519	4.03452	212.3	-3.4086	-2.15844
1381	7.73105	125.288	10.5552	4.02108	212.2	-3.40301	-2.1421
1382	7.73453	125.294	11.0584	4.00697	212.	-3.39667	-2.12567
1383	7.738	125.3	11.5617	3.9922	211.9	-3.38958	-2.10912
1384	7.74147	125.306	12.0649	3.97676	211.7	-3.38174	-2.09247
1385	7.74495	125.312	12.5682	3.96064	211.6	-3.37316	-2.07569
1386	7.74842	125.318	13.0714	3.94388	211.5	-3.36387	-2.05878
1387	7.75189	125.324	13.5746	3.92644	211.3	-3.35384	-2.04174
1388	7.75537	125.33	14.0779	3.90835	211.2	-3.3431	-2.02457
1389	7.75884	125.336	14.5811	3.88961	211.1	-3.33166	-2.00727
1390	7.76232	125.342	15.0844	3.87021	210.9	-3.31951	-1.98982
1391	7.76579	125.348	15.5876	3.85017	210.8	-3.30667	-1.97224
1392	7.76926	125.354	16.0909	3.82948	210.7	-3.29314	-1.95452
1393	7.77274	125.36	16.5941	3.80815	210.6	-3.27892	-1.93666
1394	7.77621	125.366	17.0974	3.78617	210.4	-3.26402	-1.91865
1395	7.77968	125.372	17.6006	3.76355	210.3	-3.24845	-1.9005
1396	7.78316	125.378	18.1039	3.74031	210.2	-3.23222	-1.88221
1397	7.78663	125.384	18.6071	3.71643	210.1	-3.21531	-1.86377
1398	7.79011	125.39	19.1103	3.69193	210.	-3.19775	-1.8452
1399	7.79358	125.396	19.6136	3.6668	209.9	-3.17954	-1.82647
1400	7.79705	125.402	20.1168	3.64106	209.8	-3.16067	-1.80761
1401	7.80053	125.408	20.6201	3.6147	209.7	-3.14117	-1.78861
1402	7.804	125.414	21.1233	3.58773	209.6	-3.12103	-1.76947
1403	7.80747	125.42	21.6266	3.56016	209.4	-3.10026	-1.75018
1404	7.81095	125.426	22.1298	3.53198	209.3	-3.07885	-1.73076
1405	7.81442	125.432	22.6331	3.5032	209.2	-3.05683	-1.7112
1406	7.81789	125.438	23.1363	3.47382	209.1	-3.03418	-1.6915
1407	7.82137	125.444	23.6396	3.44386	209.	-3.01093	-1.67167
1408	7.82484	125.45	24.1428	3.41331	208.9	-2.98706	-1.6517
1409	7.82832	125.456	24.6461	3.38218	208.8	-2.9626	-1.63161
1410	7.83179	125.462	25.1493	3.35047	208.7	-2.93753	-1.61138
1411	7.83526	125.468	25.6525	3.31818	208.7	-2.91187	-1.59103
1412	7.83874	125.474	26.1558	3.28533	208.6	-2.88562	-1.57054
1413	7.84221	125.48	26.659	3.25192	208.5	-2.85879	-1.54993
1414	7.84568	125.486	27.1623	3.21795	208.4	-2.83139	-1.5292
1415	7.84916	125.492	27.6655	3.18342	208.3	-2.80341	-1.50834
1416	7.85263	125.498	28.1688	3.14835	208.2	-2.77486	-1.48736
1417	7.85611	125.504	28.672	3.11273	208.1	-2.74575	-1.46627
1418	7.85958	125.51	29.1753	3.07656	208.	-2.71608	-1.44505
1419	7.86305	125.516	29.6785	3.03987	207.9	-2.68586	-1.42373
1420	7.86653	125.522	30.1818	3.00264	207.8	-2.65508	-1.40228
1421	7.87	125.529	30.685	2.9649	207.8	-2.62377	-1.38073
1422	7.87347	125.535	31.1882	2.92663	207.7	-2.59192	-1.35907
1423	7.87695	125.541	31.6915	2.88785	207.6	-2.55955	-1.3373
1424	7.88042	125.547	32.1947	2.84856	207.5	-2.52664	-1.31544
1425	7.88389	125.553	32.698	2.80877	207.4	-2.49322	-1.29346
1426	7.88737	125.559	33.2012	2.76849	207.3	-2.45928	-1.27139
1427	7.89084	125.565	33.7045	2.72771	207.3	-2.42483	-1.24923
1428	7.89432	125.571	34.2077	2.68644	207.2	-2.38988	-1.22697
1429	7.89779	125.577	34.711	2.6447	207.1	-2.35443	-1.20461
1430	7.90126	125.583	35.2142	2.60248	207.	-2.31849	-1.18216
1431	7.90474	125.589	35.7175	2.55979	206.9	-2.28206	-1.15963
1432	7.90821	125.595	36.2207	2.51664	206.9	-2.24515	-1.137
1433	7.91168	125.601	36.7239	2.47303	206.8	-2.20776	-1.1143
1434	7.91516	125.607	37.2272	2.42896	206.7	-2.1699	-1.09151
1435	7.91863	125.613	37.7304	2.38445	206.6	-2.13158	-1.06864

1436	7.92211	125.619	38.2337	2.33949	206.5	-2.09278	-1.0457
1437	7.92558	125.625	38.7369	2.2941	206.5	-2.05354	-1.02268
1438	7.92905	125.631	39.2402	2.24827	206.4	-2.01384	-.999581
1439	7.93253	125.637	39.7434	2.20201	206.3	-1.97369	-.976416
1440	7.936	125.643	40.2467	2.15534	206.2	-1.93311	-.953188
1441	7.93947	125.649	40.7499	2.10824	206.2	-1.89209	-.929882
1442	7.94295	125.655	41.2532	2.06073	206.1	-1.85063	-.906519
1443	7.94642	125.661	41.7564	2.01282	206.	-1.80875	-.883085
1444	7.94989	125.667	42.2596	1.96449	205.9	-1.76645	-.859595
1445	7.95337	125.673	42.7629	1.91577	205.9	-1.72372	-.836041
1446	7.95684	125.679	43.2661	1.86665	205.8	-1.68058	-.812431
1447	7.96032	125.685	43.7694	1.81715	205.7	-1.63703	-.788764
1448	7.96379	125.691	44.2726	1.76725	205.7	-1.59307	-.765041
1449	7.96726	125.697	44.7759	1.71696	205.6	-1.54871	-.741261
1450	7.97074	125.703	45.2791	1.66629	205.5	-1.50394	-.717424
1451	7.97421	125.709	45.7824	1.61524	205.4	-1.45877	-.693542
1452	7.97768	125.715	46.2856	1.56381	205.4	-1.4132	-.669605
1453	7.98116	125.721	46.7889	1.51201	205.3	-1.36724	-.645616
1454	7.98463	125.727	47.2921	1.45983	205.2	-1.32088	-.621576
1455	7.98811	125.733	47.7953	1.40726	205.1	-1.27413	-.597484
1456	7.99158	125.739	48.2986	1.35433	205.	-1.22698	-.57334
1457	7.99505	125.745	48.8018	1.30101	205.	-1.17943	-.549144
1458	7.99853	125.751	49.3051	1.24731	204.9	-1.13148	-.524894
1459	8.002	125.757	49.8083	1.19322	204.8	-1.08313	-.500586
1460	8.00547	125.763	50.3116	1.13873	204.7	-1.03437	-.476221
1461	8.00895	125.769	50.8148	1.08384	204.6	-.985192	-.451791
1462	8.01242	125.775	51.3181	1.02854	204.5	-.935581	-.427296
1463	8.01589	125.781	51.8213	.972808	204.5	-.885532	-.402727
1464	8.01937	125.787	52.3246	.916634	204.4	-.83503	-.378078
1465	8.02284	125.793	52.8278	.859995	204.3	-.784055	-.35334
1466	8.02632	125.799	53.3311	.802853	204.2	-.73257	-.328502
1467	8.02979	125.805	53.8343	.745184	204.	-.680557	-.303548
1468	8.03326	125.811	54.3375	.686937	203.9	-.627967	-.27846
1469	8.03674	125.817	54.8408	.628056	203.8	-.574749	-.253215
1470	8.04021	125.823	55.344	.568464	203.6	-.520833	-.227781
1471	8.04368	125.829	55.8473	.508059	203.4	-.466125	-.202117
1472	8.04716	125.835	56.3505	.4467	203.2	-.410496	-.176165
1473	8.05063	125.841	56.8538	.384187	203.	-.353761	-.149844
1474	8.0541	125.847	57.357	.320223	202.6	-.295646	-.12303
1475	8.05758	125.853	57.8603	.254325	202.1	-.235704	-.095526
1476	8.06105	125.859	58.3635	.185642	201.1	-.173139	-.0669763
1477	8.06453	125.865	58.8668	.112432	199.	-.106293	-.0366425
END	8.068	125.871	59.37	.0350715	187.2	-.0347965	-4.38E-03
2J40	8.2	126.1	2.	4.21173	218.5	-3.29689	-2.62092
1479	8.728	126.1	2.	4.21009	218.3	-3.30474	-2.60836
END	9.256	126.1	2.	4.20793	218.	-3.3143	-2.59269
2J40	8.2	126.1	2.	4.20988	216.9	-3.36534	-2.52934
1482	7.936	126.557	2.	4.20864	216.7	-3.37318	-2.51681
END	7.672	127.014	2.	4.20696	216.5	-3.3827	-2.50117
2J40	8.2	126.1	2.	4.16537	217.5	-3.3051	-2.53506
1485	7.936	125.643	2.	4.16399	217.3	-3.31295	-2.52253
END	7.672	125.186	2.	4.16215	217.	-3.32249	-2.50689
2J42	8.464	126.1	59.37	.0457798	252.5	-.0137378	-.04367
END	8.068	126.329	59.37	.0473093	338.1	.0438837	-.0176748
2J44	8.068	126.329	59.37	.0485498	189.9	-.0478246	-8.36E-03
END	8.068	125.871	59.37	.0201998	60.5	9.95E-03	.017577
2J46	8.068	125.871	59.37	.0281287	152.	-.0248425	.0131936
END	8.464	126.1	59.37	.0510397	50.1	.0327297	.0391641
GND	-75.9	133.6	0	27.5143	346.9	26.7958	-6.24672
1494	-75.9	133.6	.5	27.498	346.8	26.7746	-6.26625
1495	-75.9	133.6	1.	27.4842	346.8	26.7574	-6.27856
1496	-75.9	133.6	1.5	27.4713	346.8	26.7421	-6.28732
END	-75.9	133.6	2.	27.4632	346.8	26.7328	-6.2917

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

GND	-74.844	133.6	0	.0875105	201.	-.0816942	-.0313709
1498	-74.844	133.6	.5	.0854324	200.8	-.079877	-.0303044
1499	-74.844	133.6	1.	.0790097	200.1	-.0741833	-.0271913
1500	-74.844	133.6	1.5	.0630976	199.	-.0596429	-.0205921
END	-74.844	133.6	2.	.0898209	198.	-.0854186	-.0277751
2J54	-74.844	133.6	2.	9.06608	346.6	8.81911	-2.10165
1502	-74.851	133.6	2.50325	9.04842	346.5	8.79995	-2.10591
1503	-74.8579	133.6	3.00649	9.02849	346.5	8.77853	-2.10975
1504	-74.8648	133.6	3.50974	9.00757	346.4	8.75625	-2.11291
1505	-74.8718	133.6	4.01298	8.98568	346.4	8.73313	-2.1154
1506	-74.8787	133.6	4.51623	8.96275	346.3	8.70909	-2.11725
1507	-74.8857	133.6	5.01947	8.93887	346.3	8.6842	-2.11851
1508	-74.8926	133.6	5.52272	8.91389	346.2	8.65832	-2.1192
1509	-74.8996	133.6	6.02596	8.8879	346.2	8.63152	-2.11934
1510	-74.9065	133.6	6.52921	8.86068	346.2	8.60359	-2.11895
1511	-74.9135	133.6	7.03246	8.83239	346.1	8.57467	-2.11804
1512	-74.9204	133.6	7.5357	8.80288	346.1	8.54462	-2.11664
1513	-74.9274	133.6	8.03895	8.77222	346.1	8.5135	-2.11475
1514	-74.9343	133.6	8.54219	8.74036	346.	8.48126	-2.11237
1515	-74.9413	133.6	9.04544	8.70735	346.	8.44795	-2.10952
1516	-74.9482	133.6	9.54868	8.67307	345.9	8.41345	-2.10621
1517	-74.9552	133.6	10.0519	8.63759	345.9	8.37781	-2.10244
1518	-74.9621	133.6	10.5552	8.6009	345.9	8.34104	-2.09822
1519	-74.9691	133.6	11.0584	8.56294	345.8	8.30307	-2.09355
1520	-74.976	133.6	11.5617	8.52384	345.8	8.26404	-2.08843
1521	-74.9829	133.6	12.0649	8.48347	345.8	8.2238	-2.08289
1522	-74.9899	133.6	12.5682	8.44184	345.8	8.18236	-2.07691
1523	-74.9968	133.6	13.0714	8.39907	345.7	8.13987	-2.0705
1524	-75.0038	133.6	13.5746	8.35504	345.7	8.09617	-2.06366
1525	-75.0107	133.6	14.0779	8.30987	345.7	8.05141	-2.0564
1526	-75.0177	133.6	14.5811	8.26344	345.6	8.00545	-2.04872
1527	-75.0246	133.6	15.0844	8.21574	345.6	7.95828	-2.04063
1528	-75.0316	133.6	15.5876	8.16692	345.6	7.91006	-2.03213
1529	-75.0385	133.6	16.0909	8.1169	345.6	7.8607	-2.02322
1530	-75.0455	133.6	16.5941	8.06568	345.5	7.81021	-2.01391
1531	-75.0524	133.6	17.0974	8.01334	345.5	7.75867	-2.00419
1532	-75.0594	133.6	17.6006	7.95974	345.5	7.70592	-1.99407
1533	-75.0663	133.6	18.1039	7.90501	345.5	7.6521	-1.98356
1534	-75.0733	133.6	18.6071	7.84909	345.4	7.59716	-1.97266
1535	-75.0802	133.6	19.1103	7.79205	345.4	7.54116	-1.96137
1536	-75.0872	133.6	19.6136	7.73382	345.4	7.48402	-1.94969
1537	-75.0941	133.6	20.1168	7.67446	345.4	7.42583	-1.93763
1538	-75.1011	133.6	20.6201	7.61398	345.4	7.36657	-1.92518
1539	-75.108	133.6	21.1233	7.55239	345.3	7.30626	-1.91236
1540	-75.115	133.6	21.6266	7.48967	345.3	7.24488	-1.89917
1541	-75.1219	133.6	22.1298	7.42583	345.3	7.18244	-1.8856
1542	-75.1288	133.6	22.6331	7.36088	345.3	7.11895	-1.87166
1543	-75.1358	133.6	23.1363	7.29485	345.2	7.05444	-1.85737
1544	-75.1427	133.6	23.6396	7.22774	345.2	6.98889	-1.8427
1545	-75.1497	133.6	24.1428	7.15956	345.2	6.92234	-1.82768
1546	-75.1566	133.6	24.6461	7.0903	345.2	6.85478	-1.8123
1547	-75.1636	133.6	25.1493	7.01999	345.2	6.78621	-1.79657
1548	-75.1705	133.6	25.6525	6.94864	345.2	6.71666	-1.78049
1549	-75.1775	133.6	26.1558	6.87625	345.1	6.64612	-1.76406
1550	-75.1844	133.6	26.659	6.80284	345.1	6.57461	-1.74729
1551	-75.1914	133.6	27.1623	6.72841	345.1	6.50216	-1.73018
1552	-75.1983	133.6	27.6655	6.65298	345.1	6.42874	-1.71273
1553	-75.2053	133.6	28.1688	6.57655	345.1	6.35438	-1.69494
1554	-75.2122	133.6	28.672	6.49914	345.	6.27909	-1.67683
1555	-75.2192	133.6	29.1753	6.42075	345.	6.20288	-1.65839
1556	-75.2261	133.6	29.6785	6.34139	345.	6.12575	-1.63963
1557	-75.2331	133.6	30.1818	6.26107	345.	6.04772	-1.62053
1558	-75.24	133.6	30.685	6.17982	345.	5.9688	-1.60113

1559	-75.2469	133.6	31.1882	6.09764	345.	5.889	-1.58141
1560	-75.2539	133.6	31.6915	6.01453	345.	5.80833	-1.56138
1561	-75.2608	133.6	32.1947	5.93052	344.9	5.72681	-1.54104
1562	-75.2678	133.6	32.698	5.84561	344.9	5.64443	-1.52039
1563	-75.2747	133.6	33.2012	5.75981	344.9	5.56121	-1.49945
1564	-75.2817	133.6	33.7045	5.67314	344.9	5.47717	-1.47821
1565	-75.2886	133.6	34.2077	5.5856	344.9	5.39231	-1.45668
1566	-75.2956	133.6	34.711	5.49721	344.9	5.30665	-1.43485
1567	-75.3025	133.6	35.2142	5.40799	344.9	5.2202	-1.41274
1568	-75.3095	133.6	35.7175	5.31793	344.8	5.13296	-1.39034
1569	-75.3164	133.6	36.2207	5.22706	344.8	5.04496	-1.36767
1570	-75.3234	133.6	36.7239	5.13537	344.8	4.95619	-1.34471
1571	-75.3303	133.6	37.2272	5.04289	344.8	4.86667	-1.32148
1572	-75.3373	133.6	37.7304	4.94962	344.8	4.7764	-1.29799
1573	-75.3442	133.6	38.2337	4.85558	344.8	4.68541	-1.27422
1574	-75.3512	133.6	38.7369	4.76077	344.8	4.59368	-1.25019
1575	-75.3581	133.6	39.2402	4.6652	344.8	4.50125	-1.22591
1576	-75.3651	133.6	39.7434	4.56889	344.8	4.40811	-1.20135
1577	-75.372	133.6	40.2467	4.47183	344.7	4.31428	-1.17655
1578	-75.379	133.6	40.7499	4.37406	344.7	4.21977	-1.15149
1579	-75.3859	133.6	41.2532	4.27557	344.7	4.12459	-1.12618
1580	-75.3928	133.6	41.7564	4.17637	344.7	4.02873	-1.10063
1581	-75.3998	133.6	42.2596	4.07648	344.7	3.93222	-1.07483
1582	-75.4067	133.6	42.7629	3.97589	344.7	3.83506	-1.0488
1583	-75.4137	133.6	43.2661	3.87462	344.7	3.73726	-1.02251
1584	-75.4206	133.6	43.7694	3.77268	344.7	3.63883	-.996003
1585	-75.4276	133.6	44.2726	3.67007	344.7	3.53977	-.969253
1586	-75.4345	133.6	44.7759	3.56681	344.7	3.44009	-.942277
1587	-75.4415	133.6	45.2791	3.46289	344.7	3.3398	-.915068
1588	-75.4484	133.6	45.7824	3.35832	344.7	3.23889	-.887625
1589	-75.4554	133.6	46.2856	3.2531	344.7	3.13737	-.859963
1590	-75.4623	133.6	46.7889	3.14724	344.7	3.03526	-.832067
1591	-75.4693	133.6	47.2921	3.04074	344.7	2.93253	-.803953
1592	-75.4762	133.6	47.7953	2.93359	344.7	2.8292	-.775605
1593	-75.4832	133.6	48.2986	2.8258	344.7	2.72527	-.747038
1594	-75.4901	133.6	48.8018	2.71736	344.7	2.62072	-.718237
1595	-75.4971	133.6	49.3051	2.60827	344.7	2.51556	-.689214
1596	-75.504	133.6	49.8083	2.49851	344.7	2.40977	-.6659957
1597	-75.5109	133.6	50.3116	2.38807	344.7	2.30335	-.630467
1598	-75.5179	133.6	50.8148	2.27695	344.7	2.19627	-.600738
1599	-75.5248	133.6	51.3181	2.16509	344.7	2.08851	-.570764
1600	-75.5318	133.6	51.8213	2.05251	344.7	1.98005	-.540539
1601	-75.5387	133.6	52.3246	1.93913	344.8	1.87085	-.510051
1602	-75.5457	133.6	52.8278	1.82494	344.8	1.76088	-.479292
1603	-75.5526	133.6	53.3311	1.70987	344.8	1.65007	-.448242
1604	-75.5596	133.6	53.8343	1.59385	344.8	1.53836	-.416884
1605	-75.5665	133.6	54.3375	1.47679	344.9	1.42567	-.385194
1606	-75.5735	133.6	54.8408	1.35857	344.9	1.31188	-.353139
1607	-75.5804	133.6	55.344	1.23905	345.	1.19684	-.320676
1608	-75.5874	133.6	55.8473	1.11802	345.1	1.08035	-.28775
1609	-75.5943	133.6	56.3505	.995195	345.2	.962161	-.254282
1610	-75.6013	133.6	56.8538	.870194	345.3	.841882	-.220164
1611	-75.6082	133.6	57.357	.742401	345.6	.718923	-.185227
1612	-75.6152	133.6	57.8603	.610873	345.9	.592371	-.149205
1613	-75.6221	133.6	58.3635	.47389	346.4	.460557	-.11162
1614	-75.6291	133.6	58.8668	.327909	347.4	.320026	-.0714723
END	-75.636	133.6	59.37	.172426	350.5	.170047	-.0285481
GND	-76.428	134.514	0	.0883093	200.5	-.0826976	-.030978
1616	-76.428	134.514	.5	.0862316	200.3	-.0808768	-.0299135
1617	-76.428	134.514	1.	.0798061	199.6	-.0751683	-.0268092
1618	-76.428	134.514	1.5	.0638217	198.5	-.060522	-.0202558
END	-76.428	134.514	2.	.0909418	197.4	-.0867626	-.0272518
2J56	-76.428	134.514	2.	9.02876	346.2	8.76969	-2.14734

1620	-76.4245	134.508	2.50325	9.01071	346.2	8.7501	-2.15144
1621	-76.4211	134.502	3.00649	8.99031	346.1	8.72818	-2.15511
1622	-76.4176	134.496	3.50974	8.96892	346.1	8.70541	-2.15808
1623	-76.4141	134.49	4.01298	8.94662	346.	8.68186	-2.16038
1624	-76.4106	134.484	4.51623	8.92328	346.	8.6574	-2.16204
1625	-76.4072	134.478	5.01947	8.89891	345.9	8.63201	-2.1631
1626	-76.4037	134.472	5.52272	8.87352	345.9	8.60571	-2.16357
1627	-76.4002	134.466	6.02596	8.84703	345.8	8.57841	-2.1635
1628	-76.3967	134.46	6.52921	8.81939	345.8	8.55006	-2.16289
1629	-76.3933	134.454	7.03246	8.7906	345.8	8.52064	-2.16175
1630	-76.3898	134.448	7.5357	8.76065	345.7	8.49017	-2.16012
1631	-76.3863	134.442	8.03895	8.7295	345.7	8.45856	-2.15799
1632	-76.3828	134.436	8.54219	8.6972	345.7	8.42589	-2.15537
1633	-76.3794	134.43	9.04544	8.66369	345.6	8.39209	-2.15228
1634	-76.3759	134.424	9.54868	8.62897	345.6	8.35716	-2.14872
1635	-76.3724	134.418	10.0519	8.59304	345.5	8.3211	-2.14469
1636	-76.3689	134.412	10.5552	8.55584	345.5	8.28383	-2.14021
1637	-76.3655	134.406	11.0584	8.5175	345.5	8.24551	-2.13527
1638	-76.362	134.4	11.5617	8.47789	345.4	8.20598	-2.12989
1639	-76.3585	134.394	12.0649	8.43707	345.4	8.16532	-2.12406
1640	-76.3551	134.388	12.5682	8.39498	345.4	8.12346	-2.11779
1641	-76.3516	134.382	13.0714	8.35169	345.4	8.08047	-2.11108
1642	-76.3481	134.376	13.5746	8.3072	345.3	8.03635	-2.10396
1643	-76.3446	134.37	14.0779	8.2615	345.3	7.99109	-2.0964
1644	-76.3412	134.364	14.5811	8.21461	345.3	7.94471	-2.08841
1645	-76.3377	134.358	15.0844	8.16645	345.2	7.89712	-2.08001
1646	-76.3342	134.352	15.5876	8.11716	345.2	7.84847	-2.0712
1647	-76.3307	134.346	16.0909	8.06661	345.2	7.79862	-2.06197
1648	-76.3273	134.34	16.5941	8.01492	345.2	7.7477	-2.05233
1649	-76.3238	134.334	17.0974	7.96197	345.1	7.69559	-2.04228
1650	-76.3203	134.328	17.6006	7.90797	345.1	7.64249	-2.03184
1651	-76.3168	134.322	18.1039	7.8527	345.1	7.58818	-2.02099
1652	-76.3134	134.316	18.6071	7.79631	345.1	7.53282	-2.00975
1653	-76.3099	134.31	19.1103	7.73872	345.	7.47632	-1.99811
1654	-76.3064	134.304	19.6136	7.68001	345.	7.41876	-1.98609
1655	-76.3029	134.298	20.1168	7.62017	345.	7.36014	-1.97367
1656	-76.2995	134.292	20.6201	7.55915	345.	7.30039	-1.96088
1657	-76.296	134.286	21.1233	7.49707	344.9	7.23965	-1.9477
1658	-76.2925	134.28	21.6266	7.4338	344.9	7.17778	-1.93415
1659	-76.2891	134.274	22.1298	7.36948	344.9	7.11491	-1.92022
1660	-76.2856	134.268	22.6331	7.30406	344.9	7.05101	-1.90592
1661	-76.2821	134.262	23.1363	7.23754	344.9	6.98607	-1.89126
1662	-76.2786	134.256	23.6396	7.16994	344.8	6.9201	-1.87623
1663	-76.2752	134.25	24.1428	7.10126	344.8	6.85312	-1.86084
1664	-76.2717	134.244	24.6461	7.03152	344.8	6.78513	-1.84509
1665	-76.2682	134.238	25.1493	6.96073	344.8	6.71614	-1.82899
1666	-76.2647	134.232	25.6525	6.8889	344.7	6.64617	-1.81254
1667	-76.2613	134.226	26.1558	6.81603	344.7	6.57522	-1.79573
1668	-76.2578	134.22	26.659	6.74213	344.7	6.50331	-1.77858
1669	-76.2543	134.214	27.1623	6.66723	344.7	6.43043	-1.76109
1670	-76.2508	134.208	27.6655	6.59132	344.7	6.35661	-1.74327
1671	-76.2474	134.202	28.1688	6.51442	344.6	6.28185	-1.7251
1672	-76.2439	134.196	28.672	6.43654	344.6	6.20617	-1.70661
1673	-76.2404	134.19	29.1753	6.35768	344.6	6.12956	-1.68779
1674	-76.237	134.184	29.6785	6.27788	344.6	6.05205	-1.66864
1675	-76.2335	134.178	30.1818	6.19711	344.6	5.97364	-1.64917
1676	-76.23	134.172	30.685	6.11541	344.5	5.89435	-1.62939
1677	-76.2265	134.165	31.1882	6.03278	344.5	5.81418	-1.60929
1678	-76.2231	134.159	31.6915	5.94925	344.5	5.73315	-1.58888
1679	-76.2196	134.153	32.1947	5.8648	344.5	5.65126	-1.56816
1680	-76.2161	134.147	32.698	5.77946	344.5	5.56853	-1.54714
1681	-76.2126	134.141	33.2012	5.69323	344.5	5.48496	-1.52582
1682	-76.2092	134.135	33.7045	5.60613	344.4	5.40057	-1.50419

1683	-76.2057	134.129	34.2077	5.51818	344.4	5.31537	-1.48228
1684	-76.2022	134.123	34.711	5.42936	344.4	5.22936	-1.46008
1685	-76.1987	134.117	35.2142	5.33972	344.4	5.14257	-1.43759
1686	-76.1953	134.111	35.7175	5.24925	344.4	5.05499	-1.41482
1687	-76.1918	134.105	36.2207	5.15796	344.3	4.96664	-1.39176
1688	-76.1883	134.099	36.7239	5.06587	344.3	4.87754	-1.36843
1689	-76.1848	134.093	37.2272	4.97299	344.3	4.7877	-1.34483
1690	-76.1814	134.087	37.7304	4.87933	344.3	4.69712	-1.32096
1691	-76.1779	134.081	38.2337	4.78489	344.3	4.60581	-1.29682
1692	-76.1744	134.075	38.7369	4.6897	344.3	4.51378	-1.27243
1693	-76.171	134.069	39.2402	4.59377	344.2	4.42106	-1.24777
1694	-76.1675	134.063	39.7434	4.4971	344.2	4.32765	-1.22286
1695	-76.164	134.057	40.2467	4.3997	344.2	4.23354	-1.19769
1696	-76.1605	134.051	40.7499	4.30158	344.2	4.13876	-1.17228
1697	-76.1571	134.045	41.2532	4.20275	344.2	4.04332	-1.14661
1698	-76.1536	134.039	41.7564	4.10323	344.1	3.94722	-1.12071
1699	-76.1501	134.033	42.2596	4.00301	344.1	3.85046	-1.09456
1700	-76.1466	134.027	42.7629	3.90211	344.1	3.75306	-1.06817
1701	-76.1432	134.021	43.2661	3.80054	344.1	3.65504	-1.04156
1702	-76.1397	134.015	43.7694	3.69831	344.1	3.55638	-1.0147
1703	-76.1362	134.009	44.2726	3.59541	344.1	3.45711	-.98761
1704	-76.1327	134.003	44.7759	3.49187	344.	3.35723	-.960294
1705	-76.1293	133.997	45.2791	3.38767	344.	3.25672	-.932752
1706	-76.1258	133.991	45.7824	3.28283	344.	3.15563	-.904984
1707	-76.1223	133.985	46.2856	3.17735	344.	3.05393	-.87699
1708	-76.1188	133.979	46.7889	3.07124	344.	2.95163	-.848776
1709	-76.1154	133.973	47.2921	2.96449	343.9	2.84873	-.820337
1710	-76.1119	133.967	47.7953	2.85711	343.9	2.74524	-.791678
1711	-76.1084	133.961	48.2986	2.7491	343.9	2.64115	-.762792
1712	-76.1049	133.955	48.8018	2.64043	343.9	2.53645	-.733681
1713	-76.1015	133.949	49.3051	2.53112	343.8	2.43115	-.704348
1714	-76.098	133.943	49.8083	2.42116	343.8	2.32522	-.674786
1715	-76.0945	133.937	50.3116	2.31052	343.8	2.21867	-.644994
1716	-76.0911	133.931	50.8148	2.1992	343.8	2.11147	-.614967
1717	-76.0876	133.925	51.3181	2.08716	343.7	2.00359	-.584698
1718	-76.0841	133.919	51.8213	1.9744	343.7	1.89503	-.554181
1719	-76.0806	133.913	52.3246	1.86085	343.7	1.78573	-.523405
1720	-76.0772	133.907	52.8278	1.7465	343.6	1.67566	-.49236
1721	-76.0737	133.901	53.3311	1.63127	343.6	1.56477	-.461029
1722	-76.0702	133.895	53.8343	1.5151	343.5	1.45298	-.429395
1723	-76.0667	133.889	54.3375	1.3979	343.5	1.34022	-.39743
1724	-76.0633	133.883	54.8408	1.27955	343.4	1.22636	-.365104
1725	-76.0598	133.877	55.344	1.1599	343.3	1.11126	-.332374
1726	-76.0563	133.871	55.8473	1.03876	343.3	.994738	-.299185
1727	-76.0528	133.865	56.3505	.915819	343.2	.876502	-.265458
1728	-76.0494	133.859	56.8538	.790708	343.	.756188	-.231083
1729	-76.0459	133.853	57.357	.662817	342.8	.633208	-.195894
1730	-76.0424	133.847	57.8603	.531188	342.5	.506637	-.159622
1731	-76.039	133.841	58.3635	.394101	342.	.374811	-.12179
1732	-76.0355	133.835	58.8668	.248007	340.8	.23427	-.0813965
END	-76.032	133.829	59.37	.0925453	335.6	.0842834	-.0382223
GND	-76.428	132.686	0	.0883881	200.5	-.0827818	-.0309779
1734	-76.428	132.686	.5	.0863083	200.3	-.0809589	-.029913
1735	-76.428	132.686	1.	.0798761	199.6	-.0752433	-.0268074
1736	-76.428	132.686	1.5	.063875	198.5	-.0605794	-.0202522
END	-76.428	132.686	2.	.0910066	197.4	-.0868327	-.0272449
2J58	-76.428	132.686	2.	9.05494	346.3	8.79606	-2.14968
1738	-76.4245	132.692	2.50325	9.03689	346.2	8.77648	-2.15379
1739	-76.4211	132.698	3.00649	9.01648	346.2	8.75456	-2.15745
1740	-76.4176	132.704	3.50974	8.99508	346.1	8.73179	-2.1604
1741	-76.4141	132.71	4.01298	8.9727	346.1	8.70817	-2.16269
1742	-76.4106	132.716	4.51623	8.94936	346.	8.6837	-2.16434
1743	-76.4072	132.722	5.01947	8.92498	346.	8.65832	-2.16537

1744	-76.4037	132.728	5.52272	8.89958	345.9	8.63201	-2.16584
1745	-76.4002	132.734	6.02596	8.87302	345.9	8.60465	-2.16575
1746	-76.3967	132.74	6.52921	8.84537	345.8	8.57629	-2.16512
1747	-76.3933	132.746	7.03246	8.81657	345.8	8.54688	-2.16398
1748	-76.3898	132.752	7.5357	8.78655	345.8	8.51633	-2.16231
1749	-76.3863	132.758	8.03895	8.75539	345.7	8.48472	-2.16016
1750	-76.3828	132.764	8.54219	8.72301	345.7	8.45198	-2.15752
1751	-76.3794	132.77	9.04544	8.68949	345.6	8.41818	-2.15439
1752	-76.3759	132.776	9.54868	8.65469	345.6	8.38318	-2.1508
1753	-76.3724	132.782	10.0519	8.61869	345.6	8.34705	-2.14674
1754	-76.3689	132.788	10.5552	8.58147	345.5	8.30978	-2.14222
1755	-76.3655	132.794	11.0584	8.54305	345.5	8.27139	-2.13726
1756	-76.362	132.8	11.5617	8.50336	345.5	8.23179	-2.13184
1757	-76.3585	132.806	12.0649	8.46246	345.5	8.19106	-2.12598
1758	-76.3551	132.812	12.5682	8.42036	345.4	8.1492	-2.11967
1759	-76.3516	132.818	13.0714	8.37706	345.4	8.10621	-2.11294
1760	-76.3481	132.824	13.5746	8.33249	345.4	8.06201	-2.10577
1761	-76.3446	132.83	14.0779	8.28679	345.3	8.01676	-2.09819
1762	-76.3412	132.836	14.5811	8.23981	345.3	7.9703	-2.09017
1763	-76.3377	132.842	15.0844	8.19164	345.3	7.92271	-2.08173
1764	-76.3342	132.848	15.5876	8.14228	345.3	7.87399	-2.07289
1765	-76.3307	132.854	16.0909	8.09171	345.2	7.82414	-2.06362
1766	-76.3273	132.86	16.5941	8.03994	345.2	7.77316	-2.05394
1767	-76.3238	132.866	17.0974	7.98705	345.2	7.72112	-2.04386
1768	-76.3203	132.872	17.6006	7.9329	345.1	7.66787	-2.03338
1769	-76.3168	132.878	18.1039	7.87762	345.1	7.61357	-2.0225
1770	-76.3134	132.884	18.6071	7.82114	345.1	7.55813	-2.01121
1771	-76.3099	132.89	19.1103	7.76355	345.1	7.50163	-1.99954
1772	-76.3064	132.896	19.6136	7.70482	345.1	7.44407	-1.98747
1773	-76.3029	132.902	20.1168	7.64491	345.	7.38538	-1.97502
1774	-76.2995	132.908	20.6201	7.58387	345.	7.32563	-1.96218
1775	-76.296	132.914	21.1233	7.52171	345.	7.26482	-1.94896
1776	-76.2925	132.92	21.6266	7.45843	345.	7.20295	-1.93537
1777	-76.2891	132.926	22.1298	7.39409	344.9	7.14009	-1.9214
1778	-76.2856	132.932	22.6331	7.32857	344.9	7.07609	-1.90706
1779	-76.2821	132.938	23.1363	7.26203	344.9	7.01113	-1.89236
1780	-76.2786	132.944	23.6396	7.19438	344.9	6.94513	-1.87729
1781	-76.2752	132.95	24.1428	7.12566	344.9	6.87812	-1.86186
1782	-76.2717	132.956	24.6461	7.05588	344.8	6.8101	-1.84607
1783	-76.2682	132.962	25.1493	6.98505	344.8	6.7411	-1.82992
1784	-76.2647	132.968	25.6525	6.91318	344.8	6.6711	-1.81343
1785	-76.2613	132.974	26.1558	6.84028	344.8	6.60013	-1.79659
1786	-76.2578	132.98	26.659	6.76636	344.8	6.52819	-1.7794
1787	-76.2543	132.986	27.1623	6.69142	344.7	6.4553	-1.76187
1788	-76.2508	132.992	27.6655	6.61549	344.7	6.38147	-1.74401
1789	-76.2474	132.998	28.1688	6.53856	344.7	6.30669	-1.72581
1790	-76.2439	133.004	28.672	6.46066	344.7	6.231	-1.70728
1791	-76.2404	133.01	29.1753	6.38178	344.7	6.15438	-1.68842
1792	-76.237	133.016	29.6785	6.30195	344.6	6.07686	-1.66923
1793	-76.2335	133.022	30.1818	6.22117	344.6	5.99845	-1.64973
1794	-76.23	133.029	30.685	6.13945	344.6	5.91915	-1.62991
1795	-76.2265	133.035	31.1882	6.05681	344.6	5.83897	-1.60978
1796	-76.2231	133.041	31.6915	5.97325	344.6	5.75793	-1.58933
1797	-76.2196	133.047	32.1947	5.88878	344.6	5.67603	-1.56858
1798	-76.2161	133.053	32.698	5.80342	344.5	5.59328	-1.54753
1799	-76.2126	133.059	33.2012	5.71717	344.5	5.50971	-1.52616
1800	-76.2092	133.065	33.7045	5.63006	344.5	5.42532	-1.50451
1801	-76.2057	133.071	34.2077	5.54209	344.5	5.34011	-1.48256
1802	-76.2022	133.077	34.711	5.45327	344.5	5.2541	-1.46033
1803	-76.1987	133.083	35.2142	5.36361	344.5	5.1673	-1.43781
1804	-76.1953	133.089	35.7175	5.27313	344.4	5.07973	-1.41501
1805	-76.1918	133.095	36.2207	5.18182	344.4	4.99138	-1.39192
1806	-76.1883	133.101	36.7239	5.08972	344.4	4.90228	-1.36856

1807	-76.1848	133.107	37.2272	4.99683	344.4	4.81242	-1.34493
1808	-76.1814	133.113	37.7304	4.90315	344.4	4.72184	-1.32103
1809	-76.1779	133.119	38.2337	4.8087	344.4	4.63052	-1.29686
1810	-76.1744	133.125	38.7369	4.71348	344.3	4.53848	-1.27243
1811	-76.171	133.131	39.2402	4.61753	344.3	4.44575	-1.24775
1812	-76.1675	133.137	39.7434	4.52082	344.3	4.35231	-1.2228
1813	-76.164	133.143	40.2467	4.4234	344.3	4.25819	-1.19761
1814	-76.1605	133.149	40.7499	4.32525	344.3	4.16339	-1.17216
1815	-76.1571	133.155	41.2532	4.22639	344.3	4.06793	-1.14647
1816	-76.1536	133.161	41.7564	4.12685	344.2	3.97181	-1.12053
1817	-76.1501	133.167	42.2596	4.0266	344.2	3.87503	-1.09435
1818	-76.1466	133.173	42.7629	3.92568	344.2	3.77762	-1.06794
1819	-76.1432	133.179	43.2661	3.82408	344.2	3.67957	-1.04129
1820	-76.1397	133.185	43.7694	3.72182	344.2	3.5809	-1.01442
1821	-76.1362	133.191	44.2726	3.61889	344.2	3.48161	-.987299
1822	-76.1327	133.197	44.7759	3.51532	344.2	3.38171	-.959962
1823	-76.1293	133.203	45.2791	3.4111	344.1	3.2812	-.932392
1824	-76.1258	133.209	45.7824	3.30624	344.1	3.18008	-.904603
1825	-76.1223	133.215	46.2856	3.20074	344.1	3.07836	-.876587
1826	-76.1188	133.221	46.7889	3.0946	344.1	2.97605	-.848352
1827	-76.1154	133.227	47.2921	2.98783	344.1	2.87313	-.819891
1828	-76.1119	133.233	47.7953	2.88042	344.1	2.76963	-.791211
1829	-76.1084	133.239	48.2986	2.77238	344.	2.66552	-.762304
1830	-76.1049	133.245	48.8018	2.66369	344.	2.5608	-.733178
1831	-76.1015	133.251	49.3051	2.55436	344.	2.45548	-.703826
1832	-76.098	133.257	49.8083	2.44437	344.	2.34953	-.674247
1833	-76.0945	133.263	50.3116	2.3337	344.	2.24296	-.644437
1834	-76.0911	133.269	50.8148	2.22236	344.	2.13574	-.614394
1835	-76.0876	133.275	51.3181	2.11029	343.9	2.02784	-.58411
1836	-76.0841	133.281	51.8213	1.99749	343.9	1.91925	-.553577
1837	-76.0806	133.287	52.3246	1.88392	343.9	1.80993	-.522788
1838	-76.0772	133.293	52.8278	1.76954	343.9	1.69984	-.491729
1839	-76.0737	133.299	53.3311	1.65428	343.8	1.58893	-.460386
1840	-76.0702	133.305	53.8343	1.53808	343.8	1.47712	-.428738
1841	-76.0667	133.311	54.3375	1.42084	343.8	1.36432	-.396762
1842	-76.0633	133.317	54.8408	1.30246	343.8	1.25044	-.364424
1843	-76.0598	133.323	55.344	1.18278	343.7	1.13532	-.331684
1844	-76.0563	133.329	55.8473	1.06158	343.7	1.01876	-.298485
1845	-76.0528	133.335	56.3505	.938613	343.6	.900501	-.264749
1846	-76.0494	133.341	56.8538	.813452	343.5	.780152	-.230365
1847	-76.0459	133.347	57.357	.685506	343.5	.657136	-.195168
1848	-76.0424	133.353	57.8603	.553813	343.3	.530531	-.158889
1849	-76.039	133.359	58.3635	.416643	343.1	.398671	-.121049
1850	-76.0355	133.365	58.8668	.270401	342.6	.258094	-.0806498
END	-76.032	133.371	59.37	.114381	340.9	.108069	-.03747
2J53	-75.9	133.6	2.	9.16955	347.	8.93388	-2.06554
1852	-75.372	133.6	2.	9.15786	346.9	8.92101	-2.06931
END	-74.844	133.6	2.	9.14285	346.9	8.90453	-2.07388
2J53	-75.9	133.6	2.	9.13373	346.6	8.88622	-2.1119
1855	-76.164	134.057	2.	9.12216	346.6	8.87342	-2.11569
END	-76.428	134.514	2.	9.10667	346.5	8.85645	-2.12009
2J53	-75.9	133.6	2.	9.16	346.7	8.91266	-2.11426
1858	-76.164	133.143	2.	9.1485	346.6	8.89994	-2.11804
END	-76.428	132.686	2.	9.13294	346.6	8.8829	-2.12244
2J55	-75.636	133.6	59.37	.0902216	351.	.0891054	-.0141481
END	-76.032	133.829	59.37	.0377083	147.	-.0316245	.0205379
2J57	-76.032	133.829	59.37	.0555491	341.4	.0526589	-.0176843
END	-76.032	133.371	59.37	.0703637	165.9	-.0682356	.0171741
2J59	-76.032	133.371	59.37	.0447061	333.	.0398335	-.020296
END	-75.636	133.6	59.37	.0822121	169.9	-.0809412	.0144
GND	-128.2	121.2	0	20.2741	124.8	-11.5667	16.6508
1867	-128.2	121.2	.5	20.2297	124.8	-11.5408	16.6147
1868	-128.2	121.2	1.	20.1978	124.8	-11.5223	16.5888

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

1869	-128.2	121.2	1.5	20.1718	124.8	-11.5072	16.5677
END	-128.2	121.2	2.	20.157	124.8	-11.4986	16.5556
GND	-127.144	121.2	0	.119952	305.4	.0695098	-.0977597
1871	-127.144	121.2	.5	.116872	305.4	.067725	-.0952495
1872	-127.144	121.2	1.	.107485	305.4	.0622863	-.0875979
1873	-127.144	121.2	1.5	.0850229	305.4	.0492745	-.0692887
END	-127.144	121.2	2.	.119874	305.4	.0694874	-.0976796
2J67	-127.144	121.2	2.	6.61724	125.	-3.79618	5.42004
1875	-127.151	121.2	2.50325	6.5925	125.	-3.78183	5.39989
1876	-127.158	121.2	3.00649	6.56583	125.	-3.76636	5.37817
1877	-127.165	121.2	3.50974	6.53906	125.	-3.75082	5.35636
1878	-127.172	121.2	4.01298	6.51214	125.	-3.7352	5.33444
1879	-127.179	121.2	4.51623	6.48505	125.	-3.71948	5.31237
1880	-127.186	121.2	5.01947	6.45769	125.	-3.7036	5.29009
1881	-127.193	121.2	5.52272	6.42998	125.	-3.68752	5.26753
1882	-127.2	121.2	6.02596	6.40187	125.	-3.67121	5.24463
1883	-127.207	121.2	6.52921	6.37329	125.	-3.65462	5.22136
1884	-127.213	121.2	7.03246	6.34421	125.	-3.63774	5.19768
1885	-127.22	121.2	7.5357	6.31458	125.	-3.62055	5.17354
1886	-127.227	121.2	8.03895	6.28437	125.	-3.60301	5.14894
1887	-127.234	121.2	8.54219	6.25356	125.	-3.58513	5.12385
1888	-127.241	121.2	9.04544	6.22212	125.	-3.56688	5.09824
1889	-127.248	121.2	9.54868	6.19005	125.	-3.54827	5.07212
1890	-127.255	121.2	10.0519	6.15732	125.	-3.52929	5.04547
1891	-127.262	121.2	10.5552	6.12393	125.	-3.5099	5.01827
1892	-127.269	121.2	11.0584	6.08986	125.	-3.49014	4.99052
1893	-127.276	121.2	11.5617	6.05512	125.	-3.46999	4.96222
1894	-127.283	121.2	12.0649	6.01968	125.	-3.44943	4.93335
1895	-127.29	121.2	12.5682	5.98355	125.	-3.42847	4.90392
1896	-127.297	121.2	13.0714	5.94673	125.	-3.40712	4.87393
1897	-127.304	121.2	13.5746	5.90922	125.	-3.38537	4.84336
1898	-127.311	121.2	14.0779	5.871	124.9	-3.36321	4.81223
1899	-127.318	121.2	14.5811	5.83209	124.9	-3.34065	4.78052
1900	-127.325	121.2	15.0844	5.79248	124.9	-3.31769	4.74824
1901	-127.332	121.2	15.5876	5.75218	124.9	-3.29433	4.7154
1902	-127.339	121.2	16.0909	5.71118	124.9	-3.27057	4.68198
1903	-127.345	121.2	16.5941	5.66948	124.9	-3.24641	4.64799
1904	-127.352	121.2	17.0974	5.6271	124.9	-3.22186	4.61344
1905	-127.359	121.2	17.6006	5.58402	124.9	-3.1969	4.57833
1906	-127.366	121.2	18.1039	5.54026	124.9	-3.17156	4.54266
1907	-127.373	121.2	18.6071	5.49583	124.9	-3.14583	4.50642
1908	-127.38	121.2	19.1103	5.45071	124.9	-3.11971	4.46963
1909	-127.387	121.2	19.6136	5.40491	124.9	-3.09321	4.43228
1910	-127.394	121.2	20.1168	5.35845	124.9	-3.06631	4.39439
1911	-127.401	121.2	20.6201	5.31132	124.9	-3.03905	4.35595
1912	-127.408	121.2	21.1233	5.26353	124.9	-3.01141	4.31696
1913	-127.415	121.2	21.6266	5.21508	124.9	-2.98339	4.27744
1914	-127.422	121.2	22.1298	5.16599	124.9	-2.955	4.23738
1915	-127.429	121.2	22.6331	5.11626	124.9	-2.92625	4.1968
1916	-127.436	121.2	23.1363	5.06588	124.9	-2.89714	4.15569
1917	-127.443	121.2	23.6396	5.01488	124.9	-2.86767	4.11406
1918	-127.45	121.2	24.1428	4.96325	124.9	-2.83784	4.07191
1919	-127.457	121.2	24.6461	4.911	124.9	-2.80767	4.02925
1920	-127.464	121.2	25.1493	4.85814	124.9	-2.77715	3.98609
1921	-127.471	121.2	25.6525	4.80467	124.9	-2.74628	3.94244
1922	-127.477	121.2	26.1558	4.75061	124.9	-2.71509	3.89828
1923	-127.484	121.2	26.659	4.69595	124.9	-2.68355	3.85363
1924	-127.491	121.2	27.1623	4.64069	124.8	-2.65168	3.80849
1925	-127.498	121.2	27.6655	4.58486	124.8	-2.61949	3.76287
1926	-127.505	121.2	28.1688	4.52846	124.8	-2.58698	3.71678
1927	-127.512	121.2	28.672	4.47149	124.8	-2.55415	3.67023
1928	-127.519	121.2	29.1753	4.41397	124.8	-2.52101	3.6232
1929	-127.526	121.2	29.6785	4.35589	124.8	-2.48756	3.57572

1930	-127.533	121.2	30.1818	4.29726	124.8	-2.45381	3.52779
1931	-127.54	121.2	30.685	4.2381	124.8	-2.41976	3.47941
1932	-127.547	121.2	31.1882	4.17841	124.8	-2.38541	3.43059
1933	-127.554	121.2	31.6915	4.1182	124.8	-2.35078	3.38133
1934	-127.561	121.2	32.1947	4.05748	124.8	-2.31586	3.33165
1935	-127.568	121.2	32.698	3.99624	124.8	-2.28066	3.28154
1936	-127.575	121.2	33.2012	3.93451	124.8	-2.24519	3.23102
1937	-127.582	121.2	33.7045	3.87229	124.8	-2.20945	3.18009
1938	-127.589	121.2	34.2077	3.80959	124.8	-2.17344	3.12875
1939	-127.596	121.2	34.711	3.7464	124.8	-2.13717	3.07702
1940	-127.603	121.2	35.2142	3.68276	124.8	-2.10065	3.02489
1941	-127.609	121.2	35.7175	3.61865	124.8	-2.06388	2.97238
1942	-127.616	121.2	36.2207	3.55409	124.8	-2.02685	2.91949
1943	-127.623	121.2	36.7239	3.48909	124.8	-1.9896	2.86622
1944	-127.63	121.2	37.2272	3.42365	124.8	-1.9521	2.81259
1945	-127.637	121.2	37.7304	3.35777	124.8	-1.91437	2.7586
1946	-127.644	121.2	38.2337	3.29148	124.8	-1.87641	2.70425
1947	-127.651	121.2	38.7369	3.22478	124.8	-1.83823	2.64955
1948	-127.658	121.2	39.2402	3.15767	124.7	-1.79984	2.5945
1949	-127.665	121.2	39.7434	3.09015	124.7	-1.76122	2.53912
1950	-127.672	121.2	40.2467	3.02224	124.7	-1.7224	2.4834
1951	-127.679	121.2	40.7499	2.95394	124.7	-1.68337	2.42735
1952	-127.686	121.2	41.2532	2.88526	124.7	-1.64414	2.37097
1953	-127.693	121.2	41.7564	2.8162	124.7	-1.60471	2.31428
1954	-127.7	121.2	42.2596	2.74679	124.7	-1.56509	2.25728
1955	-127.707	121.2	42.7629	2.677	124.7	-1.52528	2.19997
1956	-127.714	121.2	43.2661	2.60686	124.7	-1.48528	2.14235
1957	-127.721	121.2	43.7694	2.53637	124.7	-1.4451	2.08443
1958	-127.728	121.2	44.2726	2.46553	124.7	-1.40474	2.02622
1959	-127.735	121.2	44.7759	2.39435	124.7	-1.3642	1.9677
1960	-127.741	121.2	45.2791	2.32283	124.7	-1.32349	1.90891
1961	-127.748	121.2	45.7824	2.25097	124.7	-1.28259	1.84981
1962	-127.755	121.2	46.2856	2.17878	124.7	-1.24153	1.79044
1963	-127.762	121.2	46.7889	2.10626	124.7	-1.20031	1.73078
1964	-127.769	121.2	47.2921	2.03341	124.7	-1.15891	1.67083
1965	-127.776	121.2	47.7953	1.96023	124.8	-1.11734	1.6106
1966	-127.783	121.2	48.2986	1.88671	124.8	-1.0756	1.55009
1967	-127.79	121.2	48.8018	1.81286	124.8	-1.0337	1.48927
1968	-127.797	121.2	49.3051	1.73868	124.8	-.991619	1.42818
1969	-127.804	121.2	49.8083	1.66415	124.8	-.949369	1.36678
1970	-127.811	121.2	50.3116	1.58927	124.8	-.906936	1.30509
1971	-127.818	121.2	50.8148	1.51403	124.8	-.864319	1.24307
1972	-127.825	121.2	51.3181	1.4384	124.8	-.821503	1.18074
1973	-127.832	121.2	51.8213	1.36239	124.8	-.77849	1.11806
1974	-127.839	121.2	52.3246	1.28595	124.9	-.735257	1.05502
1975	-127.846	121.2	52.8278	1.20906	124.9	-.691794	.991591
1976	-127.853	121.2	53.3311	1.13169	124.9	-.648079	.927753
1977	-127.86	121.2	53.8343	1.05379	125.	-.604085	.863456
1978	-127.867	121.2	54.3375	.975305	125.	-.559782	.798664
1979	-127.873	121.2	54.8408	.896153	125.1	-.515125	.733306
1980	-127.88	121.2	55.344	.816233	125.2	-.47006	.667294
1981	-127.887	121.2	55.8473	.735418	125.3	-.424511	.600525
1982	-127.894	121.2	56.3505	.65352	125.4	-.378375	.532843
1983	-127.901	121.2	56.8538	.570282	125.5	-.331506	.464031
1984	-127.908	121.2	57.357	.485312	125.8	-.283686	.393764
1985	-127.915	121.2	57.8603	.397979	126.1	-.234557	.321513
1986	-127.922	121.2	58.3635	.307161	126.7	-.183483	.246337
1987	-127.929	121.2	58.8668	.210533	127.8	-.12914	.166274
END	-127.936	121.2	59.37	.107822	131.4	-.0712578	.0809198
GND	-128.728	122.114	0	.118964	305.4	.0688818	-.0969939
1989	-128.728	122.114	.5	.115894	305.4	.0671022	-.0944915
1990	-128.728	122.114	1.	.106539	305.4	.0616831	-.0868667
1991	-128.728	122.114	1.5	.0842084	305.4	.048752	-.0686607

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

END	-128.728	122.114	2.	.118645	305.4	.0686886	-.0967392
2J69	-128.728	122.114	2.	6.53584	124.7	-3.72289	5.3719
1993	-128.725	122.108	2.50325	6.51144	124.7	-3.70876	5.352
1994	-128.721	122.102	3.00649	6.48514	124.7	-3.69353	5.33056
1995	-128.718	122.096	3.50974	6.45872	124.7	-3.67825	5.30901
1996	-128.714	122.09	4.01298	6.43219	124.7	-3.66289	5.28737
1997	-128.711	122.084	4.51623	6.40548	124.7	-3.64744	5.26558
1998	-128.707	122.078	5.01947	6.3785	124.7	-3.63183	5.24357
1999	-128.704	122.072	5.52272	6.35118	124.7	-3.61603	5.22128
2000	-128.7	122.066	6.02596	6.32347	124.7	-3.60001	5.19867
2001	-128.697	122.06	6.52921	6.29529	124.7	-3.58373	5.17567
2002	-128.693	122.054	7.03246	6.26661	124.7	-3.56714	5.15227
2003	-128.69	122.048	7.5357	6.23738	124.7	-3.55026	5.12841
2004	-128.686	122.042	8.03895	6.20759	124.7	-3.53304	5.10409
2005	-128.683	122.036	8.54219	6.17719	124.7	-3.51548	5.07928
2006	-128.679	122.03	9.04544	6.14618	124.7	-3.49757	5.05396
2007	-128.676	122.024	9.54868	6.11452	124.7	-3.47929	5.02811
2008	-128.672	122.018	10.0519	6.08222	124.7	-3.46064	5.00174
2009	-128.669	122.012	10.5552	6.04926	124.7	-3.44161	4.97483
2010	-128.665	122.006	11.0584	6.01563	124.7	-3.4222	4.94735
2011	-128.662	122.	11.5617	5.98132	124.7	-3.4024	4.91934
2012	-128.659	121.994	12.0649	5.94633	124.7	-3.38221	4.89076
2013	-128.655	121.988	12.5682	5.91065	124.7	-3.36162	4.86161
2014	-128.652	121.982	13.0714	5.87428	124.7	-3.34064	4.8319
2015	-128.648	121.976	13.5746	5.83722	124.7	-3.31927	4.80162
2016	-128.645	121.97	14.0779	5.79946	124.7	-3.2975	4.77077
2017	-128.641	121.964	14.5811	5.76101	124.6	-3.27533	4.73935
2018	-128.638	121.958	15.0844	5.72186	124.6	-3.25276	4.70736
2019	-128.634	121.952	15.5876	5.68203	124.6	-3.2298	4.67481
2020	-128.631	121.946	16.0909	5.64149	124.6	-3.20644	4.64168
2021	-128.627	121.94	16.5941	5.60027	124.6	-3.18269	4.60798
2022	-128.624	121.934	17.0974	5.55835	124.6	-3.15854	4.57372
2023	-128.62	121.928	17.6006	5.51575	124.6	-3.13401	4.53889
2024	-128.617	121.922	18.1039	5.47246	124.6	-3.10908	4.5035
2025	-128.613	121.916	18.6071	5.4285	124.6	-3.08377	4.46755
2026	-128.61	121.91	19.1103	5.38386	124.6	-3.05808	4.43105
2027	-128.606	121.904	19.6136	5.33854	124.6	-3.03199	4.39398
2028	-128.603	121.898	20.1168	5.29256	124.6	-3.00554	4.35637
2029	-128.599	121.892	20.6201	5.24591	124.6	-2.9787	4.31821
2030	-128.596	121.886	21.1233	5.19861	124.6	-2.95149	4.27951
2031	-128.593	121.88	21.6266	5.15065	124.6	-2.92391	4.24028
2032	-128.589	121.874	22.1298	5.10204	124.6	-2.89597	4.2005
2033	-128.586	121.868	22.6331	5.05279	124.6	-2.86765	4.1602
2034	-128.582	121.862	23.1363	5.00289	124.6	-2.83898	4.11936
2035	-128.579	121.856	23.6396	4.95236	124.6	-2.80995	4.078
2036	-128.575	121.85	24.1428	4.90121	124.6	-2.78057	4.03613
2037	-128.572	121.844	24.6461	4.84944	124.6	-2.75083	3.99374
2038	-128.568	121.838	25.1493	4.79705	124.6	-2.72075	3.95085
2039	-128.565	121.832	25.6525	4.74405	124.5	-2.69032	3.90745
2040	-128.561	121.826	26.1558	4.69045	124.5	-2.65957	3.86355
2041	-128.558	121.82	26.659	4.63626	124.5	-2.62847	3.81916
2042	-128.554	121.814	27.1623	4.58148	124.5	-2.59705	3.77429
2043	-128.551	121.808	27.6655	4.52612	124.5	-2.5653	3.72894
2044	-128.547	121.802	28.1688	4.47018	124.5	-2.53323	3.6831
2045	-128.544	121.796	28.672	4.41368	124.5	-2.50085	3.6368
2046	-128.54	121.79	29.1753	4.35662	124.5	-2.46815	3.59004
2047	-128.537	121.784	29.6785	4.29901	124.5	-2.43515	3.54281
2048	-128.533	121.778	30.1818	4.24085	124.5	-2.40184	3.49514
2049	-128.53	121.771	30.685	4.18216	124.5	-2.36824	3.44701
2050	-128.527	121.765	31.1882	4.12293	124.5	-2.33433	3.39844
2051	-128.523	121.759	31.6915	4.06318	124.5	-2.30014	3.34944
2052	-128.52	121.753	32.1947	4.00291	124.5	-2.26566	3.30001
2053	-128.516	121.747	32.698	3.94214	124.5	-2.23091	3.25016

2054	-128.513	121.741	33.2012	3.88086	124.5	-2.19587	3.19988
2055	-128.509	121.735	33.7045	3.81909	124.5	-2.16057	3.14919
2056	-128.506	121.729	34.2077	3.75684	124.4	-2.125	3.0981
2057	-128.502	121.723	34.711	3.6941	124.4	-2.08916	3.0466
2058	-128.499	121.717	35.2142	3.6309	124.4	-2.05307	2.99471
2059	-128.495	121.711	35.7175	3.56722	124.4	-2.01672	2.94244
2060	-128.492	121.705	36.2207	3.5031	124.4	-1.98013	2.88978
2061	-128.488	121.699	36.7239	3.43852	124.4	-1.94329	2.83674
2062	-128.485	121.693	37.2272	3.37351	124.4	-1.90621	2.78333
2063	-128.481	121.687	37.7304	3.30806	124.4	-1.8689	2.72956
2064	-128.478	121.681	38.2337	3.24219	124.4	-1.83135	2.67543
2065	-128.474	121.675	38.7369	3.17589	124.4	-1.79358	2.62094
2066	-128.471	121.669	39.2402	3.10919	124.4	-1.75559	2.56611
2067	-128.467	121.663	39.7434	3.04208	124.4	-1.71738	2.51095
2068	-128.464	121.657	40.2467	2.97456	124.4	-1.67896	2.45543
2069	-128.461	121.651	40.7499	2.90667	124.4	-1.64033	2.39959
2070	-128.457	121.645	41.2532	2.83838	124.3	-1.60149	2.34342
2071	-128.454	121.639	41.7564	2.76972	124.3	-1.56245	2.28694
2072	-128.45	121.633	42.2596	2.70069	124.3	-1.52322	2.23014
2073	-128.447	121.627	42.7629	2.63129	124.3	-1.48379	2.17303
2074	-128.443	121.621	43.2661	2.56153	124.3	-1.44418	2.1156
2075	-128.44	121.615	43.7694	2.49141	124.3	-1.40437	2.05788
2076	-128.436	121.609	44.2726	2.42095	124.3	-1.36439	1.99986
2077	-128.433	121.603	44.7759	2.35014	124.3	-1.32421	1.94155
2078	-128.429	121.597	45.2791	2.27899	124.3	-1.28387	1.88294
2079	-128.426	121.591	45.7824	2.20749	124.3	-1.24335	1.82403
2080	-128.422	121.585	46.2856	2.13566	124.3	-1.20265	1.76485
2081	-128.419	121.579	46.7889	2.0635	124.3	-1.16178	1.70537
2082	-128.415	121.573	47.2921	1.99101	124.3	-1.12074	1.64562
2083	-128.412	121.567	47.7953	1.91817	124.2	-1.07952	1.58556
2084	-128.408	121.561	48.2986	1.845	124.2	-1.03813	1.52522
2085	-128.405	121.555	48.8018	1.77149	124.2	-.996562	1.4646
2086	-128.401	121.549	49.3051	1.69764	124.2	-.954821	1.40368
2087	-128.398	121.543	49.8083	1.62345	124.2	-.912904	1.34246
2088	-128.395	121.537	50.3116	1.54889	124.2	-.870796	1.28093
2089	-128.391	121.531	50.8148	1.47397	124.2	-.828504	1.21908
2090	-128.388	121.525	51.3181	1.39866	124.2	-.786007	1.15691
2091	-128.384	121.519	51.8213	1.32295	124.2	-.743311	1.09439
2092	-128.381	121.513	52.3246	1.24682	124.2	-.700387	1.03151
2093	-128.377	121.507	52.8278	1.17023	124.2	-.65723	.968242
2094	-128.374	121.501	53.3311	1.09315	124.2	-.613817	.904553
2095	-128.37	121.495	53.8343	1.01554	124.2	-.57012	.840411
2096	-128.367	121.489	54.3375	.93734	124.1	-.526109	.775768
2097	-128.363	121.483	54.8408	.858461	124.1	-.48174	.710551
2098	-128.36	121.477	55.344	.778814	124.1	-.436956	.644687
2099	-128.356	121.471	55.8473	.69826	124.1	-.391685	.578057
2100	-128.353	121.465	56.3505	.616615	124.1	-.345822	.510511
2101	-128.349	121.459	56.8538	.533619	124.1	-.299222	.441832
2102	-128.346	121.453	57.357	.448877	124.1	-.251664	.371693
2103	-128.342	121.447	57.8603	.361753	124.1	-.202792	.299567
2104	-128.339	121.441	58.3635	.271111	124.1	-.151972	.224513
2105	-128.335	121.435	58.8668	.174583	124.1	-.0978764	.144567
END	-128.332	121.429	59.37	.071685	124.1	-.0402411	.0593245
GND	-128.728	120.286	0	.118945	305.4	.0688277	-.0970088
2107	-128.728	120.286	.5	.115874	305.4	.0670489	-.0945056
2108	-128.728	120.286	1.	.10652	305.4	.061633	-.0868788
2109	-128.728	120.286	1.5	.0841914	305.4	.0487111	-.0686688
END	-128.728	120.286	2.	.118604	305.3	.0686178	-.0967392
2J71	-128.728	120.286	2.	6.52725	124.6	-3.70339	5.37493
2111	-128.725	120.292	2.50325	6.50284	124.6	-3.68927	5.35502
2112	-128.721	120.298	3.00649	6.47656	124.6	-3.67407	5.33358
2113	-128.718	120.304	3.50974	6.45018	124.6	-3.65881	5.31205
2114	-128.714	120.31	4.01298	6.42366	124.6	-3.64348	5.29042

2115	-128.711	120.316	4.51623	6.39697	124.6	-3.62804	5.26864
2116	-128.707	120.322	5.01947	6.37001	124.5	-3.61247	5.24663
2117	-128.704	120.328	5.52272	6.34273	124.5	-3.5967	5.22436
2118	-128.7	120.334	6.02596	6.31503	124.5	-3.5807	5.20175
2119	-128.697	120.34	6.52921	6.28688	124.5	-3.56444	5.17877
2120	-128.693	120.346	7.03246	6.25823	124.5	-3.5479	5.15537
2121	-128.69	120.352	7.5357	6.22904	124.5	-3.53104	5.13154
2122	-128.686	120.358	8.03895	6.19926	124.5	-3.51386	5.10722
2123	-128.683	120.364	8.54219	6.1689	124.5	-3.49634	5.08242
2124	-128.679	120.37	9.04544	6.13792	124.5	-3.47846	5.05711
2125	-128.676	120.376	9.54868	6.1063	124.5	-3.46022	5.03129
2126	-128.672	120.382	10.0519	6.07404	124.5	-3.4416	5.00493
2127	-128.669	120.388	10.5552	6.04111	124.5	-3.42261	4.97802
2128	-128.665	120.394	11.0584	6.00752	124.5	-3.40324	4.95057
2129	-128.662	120.4	11.5617	5.97323	124.5	-3.38348	4.92256
2130	-128.659	120.406	12.0649	5.93827	124.5	-3.36333	4.89399
2131	-128.655	120.412	12.5682	5.90262	124.5	-3.34278	4.86485
2132	-128.652	120.418	13.0714	5.86629	124.5	-3.32184	4.83515
2133	-128.648	120.424	13.5746	5.82926	124.5	-3.30051	4.80489
2134	-128.645	120.43	14.0779	5.79155	124.5	-3.27879	4.77405
2135	-128.641	120.436	14.5811	5.75313	124.5	-3.25666	4.74265
2136	-128.638	120.442	15.0844	5.71404	124.5	-3.23415	4.71068
2137	-128.634	120.448	15.5876	5.67425	124.5	-3.21124	4.67814
2138	-128.631	120.454	16.0909	5.63377	124.5	-3.18794	4.64504
2139	-128.627	120.46	16.5941	5.59259	124.5	-3.16423	4.61137
2140	-128.624	120.466	17.0974	5.55073	124.5	-3.14015	4.57713
2141	-128.62	120.472	17.6006	5.50819	124.4	-3.11567	4.54233
2142	-128.617	120.478	18.1039	5.46497	124.4	-3.09081	4.50697
2143	-128.613	120.484	18.6071	5.42106	124.4	-3.06556	4.47105
2144	-128.61	120.49	19.1103	5.37649	124.4	-3.03993	4.43457
2145	-128.606	120.496	19.6136	5.33124	124.4	-3.01391	4.39755
2146	-128.603	120.502	20.1168	5.28533	124.4	-2.98752	4.35997
2147	-128.599	120.508	20.6201	5.23875	124.4	-2.96075	4.32185
2148	-128.596	120.514	21.1233	5.19151	124.4	-2.93361	4.28319
2149	-128.593	120.52	21.6266	5.14362	124.4	-2.9061	4.24399
2150	-128.589	120.526	22.1298	5.09509	124.4	-2.87822	4.20426
2151	-128.586	120.532	22.6331	5.04591	124.4	-2.84998	4.16399
2152	-128.582	120.538	23.1363	4.99609	124.4	-2.82138	4.12319
2153	-128.579	120.544	23.6396	4.94564	124.4	-2.79242	4.08188
2154	-128.575	120.55	24.1428	4.89456	124.4	-2.76311	4.04004
2155	-128.572	120.556	24.6461	4.84287	124.4	-2.73346	3.9977
2156	-128.568	120.562	25.1493	4.79057	124.4	-2.70346	3.95485
2157	-128.565	120.568	25.6525	4.73765	124.3	-2.67311	3.9115
2158	-128.561	120.574	26.1558	4.68413	124.3	-2.64243	3.86764
2159	-128.558	120.58	26.659	4.63001	124.3	-2.6114	3.82329
2160	-128.554	120.586	27.1623	4.57531	124.3	-2.58006	3.77846
2161	-128.551	120.592	27.6655	4.52003	124.3	-2.54839	3.73315
2162	-128.547	120.598	28.1688	4.46418	124.3	-2.5164	3.68736
2163	-128.544	120.604	28.672	4.40776	124.3	-2.48409	3.6411
2164	-128.54	120.61	29.1753	4.35078	124.3	-2.45147	3.59438
2165	-128.537	120.616	29.6785	4.29324	124.3	-2.41854	3.5472
2166	-128.533	120.622	30.1818	4.23516	124.3	-2.38531	3.49956
2167	-128.53	120.628	30.685	4.17655	124.3	-2.35178	3.45148
2168	-128.527	120.635	31.1882	4.1174	124.3	-2.31795	3.40295
2169	-128.523	120.641	31.6915	4.05773	124.3	-2.28384	3.35399
2170	-128.52	120.647	32.1947	3.99754	124.2	-2.24944	3.3046
2171	-128.516	120.653	32.698	3.93685	124.2	-2.21476	3.25478
2172	-128.513	120.659	33.2012	3.87565	124.2	-2.1798	3.20455
2173	-128.509	120.665	33.7045	3.81396	124.2	-2.14457	3.1539
2174	-128.506	120.671	34.2077	3.75178	124.2	-2.10908	3.10284
2175	-128.502	120.677	34.711	3.68913	124.2	-2.07332	3.05139
2176	-128.499	120.683	35.2142	3.626	124.2	-2.0373	2.99955
2177	-128.495	120.689	35.7175	3.56242	124.2	-2.00104	2.94732

**APPENDIX B – NIGHTTIME DIRECTIONAL ARRAY MODEL
WYLL(AM) – CHICAGO, ILLINOIS**

2178	-128.492	120.695	36.2207	3.49838	124.2	-1.96452	2.8947
2179	-128.488	120.701	36.7239	3.43388	124.2	-1.92776	2.84171
2180	-128.485	120.707	37.2272	3.36895	124.1	-1.89076	2.78834
2181	-128.481	120.713	37.7304	3.30359	124.1	-1.85353	2.73462
2182	-128.478	120.719	38.2337	3.23779	124.1	-1.81606	2.68053
2183	-128.474	120.725	38.7369	3.17158	124.1	-1.77837	2.62609
2184	-128.471	120.731	39.2402	3.10496	124.1	-1.74045	2.5713
2185	-128.467	120.737	39.7434	3.03793	124.1	-1.70232	2.51617
2186	-128.464	120.743	40.2467	2.9705	124.1	-1.66397	2.46071
2187	-128.461	120.749	40.7499	2.90268	124.1	-1.62542	2.40491
2188	-128.457	120.755	41.2532	2.83448	124.	-1.58666	2.34878
2189	-128.454	120.761	41.7564	2.7659	124.	-1.5477	2.29234
2190	-128.45	120.767	42.2596	2.69694	124.	-1.50854	2.23557
2191	-128.447	120.773	42.7629	2.62762	124.	-1.46919	2.1785
2192	-128.443	120.779	43.2661	2.55793	124.	-1.42964	2.12112
2193	-128.44	120.785	43.7694	2.48789	124.	-1.38991	2.06343
2194	-128.436	120.791	44.2726	2.4175	123.9	-1.35	2.00544
2195	-128.433	120.797	44.7759	2.34676	123.9	-1.3099	1.94716
2196	-128.429	120.803	45.2791	2.27567	123.9	-1.26962	1.88858
2197	-128.426	120.809	45.7824	2.20425	123.9	-1.22916	1.82972
2198	-128.422	120.815	46.2856	2.13249	123.9	-1.18853	1.77056
2199	-128.419	120.821	46.7889	2.0604	123.9	-1.14773	1.71112
2200	-128.415	120.827	47.2921	1.98797	123.8	-1.10676	1.65139
2201	-128.412	120.833	47.7953	1.9152	123.8	-1.0656	1.59137
2202	-128.408	120.839	48.2986	1.8421	123.8	-1.02428	1.53107
2203	-128.405	120.845	48.8018	1.76866	123.8	-.98278	1.47047
2204	-128.401	120.851	49.3051	1.69487	123.7	-.94111	1.40958
2205	-128.398	120.857	49.8083	1.62074	123.7	-.89925	1.34838
2206	-128.395	120.863	50.3116	1.54625	123.7	-.857212	1.28689
2207	-128.391	120.869	50.8148	1.47138	123.6	-.814977	1.22506
2208	-128.388	120.875	51.3181	1.39614	123.6	-.77255	1.16292
2209	-128.384	120.881	51.8213	1.3205	123.6	-.729912	1.10043
2210	-128.381	120.887	52.3246	1.24442	123.5	-.687055	1.03757
2211	-128.377	120.893	52.8278	1.16791	123.5	-.643959	.97433
2212	-128.374	120.899	53.3311	1.09089	123.4	-.600606	.910662
2213	-128.37	120.905	53.8343	1.01334	123.3	-.556971	.846549
2214	-128.367	120.911	54.3375	.935193	123.3	-.513019	.781919
2215	-128.363	120.917	54.8408	.856377	123.2	-.468709	.716724
2216	-128.36	120.923	55.344	.776793	123.1	-.423984	.65088
2217	-128.356	120.929	55.8473	.696303	123.	-.378771	.584269
2218	-128.353	120.935	56.3505	.614726	122.8	-.332966	.516741
2219	-128.349	120.941	56.8538	.531802	122.6	-.286423	.448079
2220	-128.346	120.947	57.357	.447141	122.3	-.238922	.377957
2221	-128.342	120.953	57.8603	.360113	121.9	-.190106	.305845
2222	-128.339	120.959	58.3635	.269605	121.1	-.139341	.230805
2223	-128.335	120.965	58.8668	.173316	119.5	-.0853012	.150871
END	-128.332	120.971	59.37	.0712512	112.9	-.0277199	.065638
2J66	-128.2	121.2	2.	6.77725	125.	-3.88894	5.55043
2225	-127.672	121.2	2.	6.75944	125.	-3.87862	5.53592
END	-127.144	121.2	2.	6.73711	125.	-3.86567	5.51772
2J66	-128.2	121.2	2.	6.69427	124.7	-3.81463	5.50108
2228	-128.464	121.657	2.	6.67642	124.7	-3.80429	5.48653
END	-128.728	122.114	2.	6.65448	124.7	-3.79157	5.46864
2J66	-128.2	121.2	2.	6.68562	124.6	-3.79505	5.5041
2231	-128.464	120.743	2.	6.66778	124.6	-3.78471	5.48956
END	-128.728	120.286	2.	6.64584	124.6	-3.77201	5.47167
2J68	-127.936	121.2	59.37	.0531773	129.	-.0334438	.0413442
END	-128.332	121.429	59.37	.0302386	295.5	.0130155	-.0272941
2J70	-128.332	121.429	59.37	.0420378	130.4	-.0272256	.0320303
END	-128.332	120.971	59.37	.0412973	297.6	.0191198	-.0366046
2J72	-128.332	120.971	59.37	.0302803	106.5	-8.6E-03	.0290333
END	-127.936	121.2	59.37	.0547368	313.7	.037814	-.0395755