Federal Communications Commission
Washington, D. C. 20554

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

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY
FILE NO. BMML-20160125AAZ

SECTION I - APPLICANT FEE INFORMATION

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

Townsquare Media Binghamton License, LLC

MAILING ADDRESS (Line 1) (Maximum 35 characters)
240 Greenwich Avenue

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
Greenwich	CT	06830

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
2038610900	WYOS	7921

2. A. Is a fee submitted with this application? [✓] Yes [ ] No

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

[ ] Governmental Entity [ ] Noncommercial educational licensee [ ] Other (Please explain):

C. If Yes, provide the following information:

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

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
	0001	$	

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

(A)	(B)	(C)	FOR FCC USE ONLY
	0001	$	

	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	$	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Townsquare Media Binghamton License, LLC		
MAILING ADDRESS 240 Greenwich Avenue		
CITY Greenwich	STATE CT	ZIP CODE 06830

2. This application is for:

☑ Commercial ☐ Noncommercial

☑ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
WYOS	Binghamton, NY	N/A	N/A	N/A

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

☑ Yes ☐ No

If No, explain in an Exhibit.

Exhibit No.

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

☐ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

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

☐ Yes ☐ No

If Yes, explain in an Exhibit.

Exhibit No.

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

☐ Yes ☐ No

☑ Does not apply

If No, explain in an Exhibit.

Exhibit No.

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

☐ Yes ☑ No

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

Exhibit No.

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

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

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

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

CERTIFICATION

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

☑ Yes ☐ No

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

Name	Signature	
Christopher Kitchen		
Title	Date	Telephone Number
Executive Vice President and General Counsel	01/21/2016	203-861-0900

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

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

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

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

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

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

Townsquare Media Binghamton License, LLC

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

[X] Station License [ ] Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
WYOS	N/A	1360	UNLIMITED	5.0	0.5

2. Station location

State	City or Town
BINGHAMTON	NEW YORK

3. Transmitter location

State	County	City or Town	Street address (or other identification)
NY	BROOME	BINGHAMTON	

4. Main studio location

State	County	City or Town	Street address (or other identification)
NY	BROOME	BINGHAMTON	

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

State	County	City or Town	Street address (or other identification)
NY	BROOME	BINGHAMTON	

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

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? [X] [ ] [ ] Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No.

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
3.16	10.0

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50.0	50.0	+/- j0	+/- j0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
Tower #1 South	132.5°	141.2°	0.859	0.588		
Tower #2 Center	0.0°	0.0°	1.000	1.000		
Tower #3 North	-144.9°	-85.5°	0.486	0.363		

Manufacturer and type of antenna monitor: POTOMAC INSTRUMENTS AM19

SECTION III - Page 2

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

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
UNIFORM CROSS SECTION GUYED TOWER	59.1	60.0	60.0	Exhibit No.

Excitation [X] Series [ ] Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	West Longitude
42 ° 04 ' 01 "	75 ° 54 ' 22 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No.

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

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

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

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Stephen S. Lockwood, P.E.	
Address (include ZIP Code)	Date: 19 January 2016
	Telephone No. (Include Area Code): 206 783 9151

[ ] Technical Director

[X] Registered Professional Engineer

[ ] Chief Operator

[ ] Technical Consultant

[ ] Other (specify)

BENJAMIN F. DAWSON III, PE
THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE
MICHAEL H. MEHIGAN, PE

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CONSULTANT

MAURY L. HATFIELD, PE
(1942-2009)
PAUL W. LEONARD, PE
(1925-2011)

Engineering Report:

APPLICATION FOR STATION LICENSE

Proof of Performance

WYOS, 1360 kHz

5 kW Daytime 0.5 kW Nighttime DA-2

Facility ID 7921

Binghamton, New York

TOWNSQUARE MEDIA BINGHAMTON LICENSE, LLC

January 2016

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After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
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Purpose of Application

This Engineering Report is part of an application for Station License by Townsquare Media Binghamton License, LLC licensee of WYOS-AM, Binghamton, NY.

Background

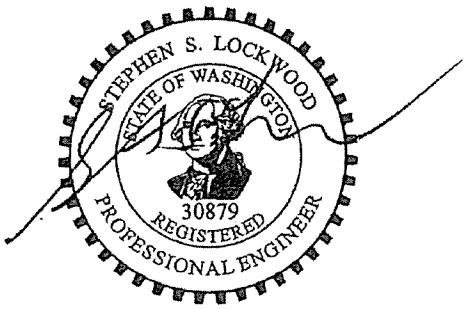
WYOS employs a three tower directional antenna for both daytime and nighttime operation with a power of 5 kW daytime and 0.5 kW nighttime. A Moment Method proof was performed in 2011 on this antenna system. In August 2012 the north tower collapsed after a contractor accidentally cut a guy wire while mowing grass. Since that time the station has operated under STA. The tower has been replaced and operation of the antenna system has been restored.

Information is provided herein demonstrating that the directional antenna parameters for the licensed pattern have been determined in accordance with the requirements of section §73.151(c) of the Commissions Rules. The system has been adjusted to produce antenna monitor parameters within ± 5 % of ratio and ± 3° of phase of the modeled values, as required by the Rules.

The base impedance and sample system measurements used in this report were made under the direction of Mark Simpson, VP Engineering of Townsquare Media. These measurements were made by Kevin Bixby, Chief Engineer, and Mark Humphreys, Technical Consultant.

Stephen S. Lockwood, P.E.

19 January 2016

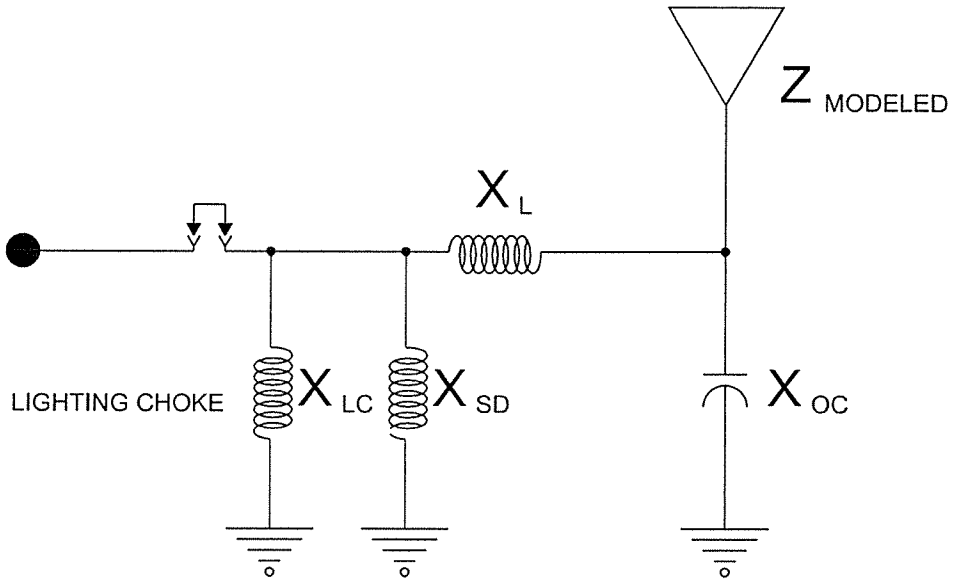


ITEM 1 - Tower Impedance Measurements and Model Verification

Tower Base Impedance measurements were made at the reference point at the output of the Antenna Tuning Units (ATUs). These measurements were made using an Delta OIB-1 Operating Impedance Bridge and a Receiver/Generator set. The other towers within the array were in the open circuit condition.

Standard electrical circuit calculations were used to relate the measured impedance ($Z_{ATU\ Measured}$) to the moment method base modeled impedance ($Z_{Modeled}$). X_L and X_C are assumed stray base capacitance and lead inductance for each tower. The measured reactances for the lighting chokes are included in this model.

The modeled ($Z_{ATU\ Modeled}$) and measured ($Z_{ATU\ Measured}$) base impedance at each ATU output with the other towers open circuited at their ATU outputs agree within ± 2 ohm and ± 4 % for resistance and reactance.



TOWER	X_{LC} (Ω)	X_{SD} (Ω)	X_L (Ω)	X_{OC} (Ω)	$Z_{MODELED}$ (Ω)	$Z_{ATU\ MODELED}$ (Ω)	$Z_{ATU\ MEASURED}$ (Ω)
TWR #1	+j6950	+j10,000	+j22	-j550	68.4+j103.2	94.9 +j131.6	95.2 +j131.9
TWR #2	+j6950	+j10,000	+j31	-j470	63.4 +j94.4	90.5 +j130.7	92.0 +j130.6
TWR #3	+j6950	+j10,000	+j24	-j775	69.4+j102.8	85.6+j130.8	85.5+j130.6

Dwayne Straume, H&D 1/8/2015 10:45 AM WYOS CIRCUIT MOM TABLE.dwg PDF FILE: KPUG MOM TABLE.pdf

HATFIELD & DAWSON
CONSULTING ENGINEERS

ANALYSIS OF TOWER IMPEDANCE MEASUREMENTS TO VERIFY METHOD OF MOMENTS MODEL

WYOS(AM) 1360 kHz BINGHAMTON, NY 1/2015

ITEM 2 - Derivation of Operating Parameters for Directional Antenna

PSpice is an analog circuit simulator computer program. It calculates the voltages and currents of a circuit under a variety of different excitation circumstances, such as DC, AC, and in time using nodal and mesh analysis applications of Kirchhoff's laws (among other features). PSpice was used to model the circuit conditions around the tower bases to derive the antenna monitor parameters, based on the tower base currents calculated by the moment method model. The 1999 ORCAD Pspice Demo Version 9.1 of this program was used.

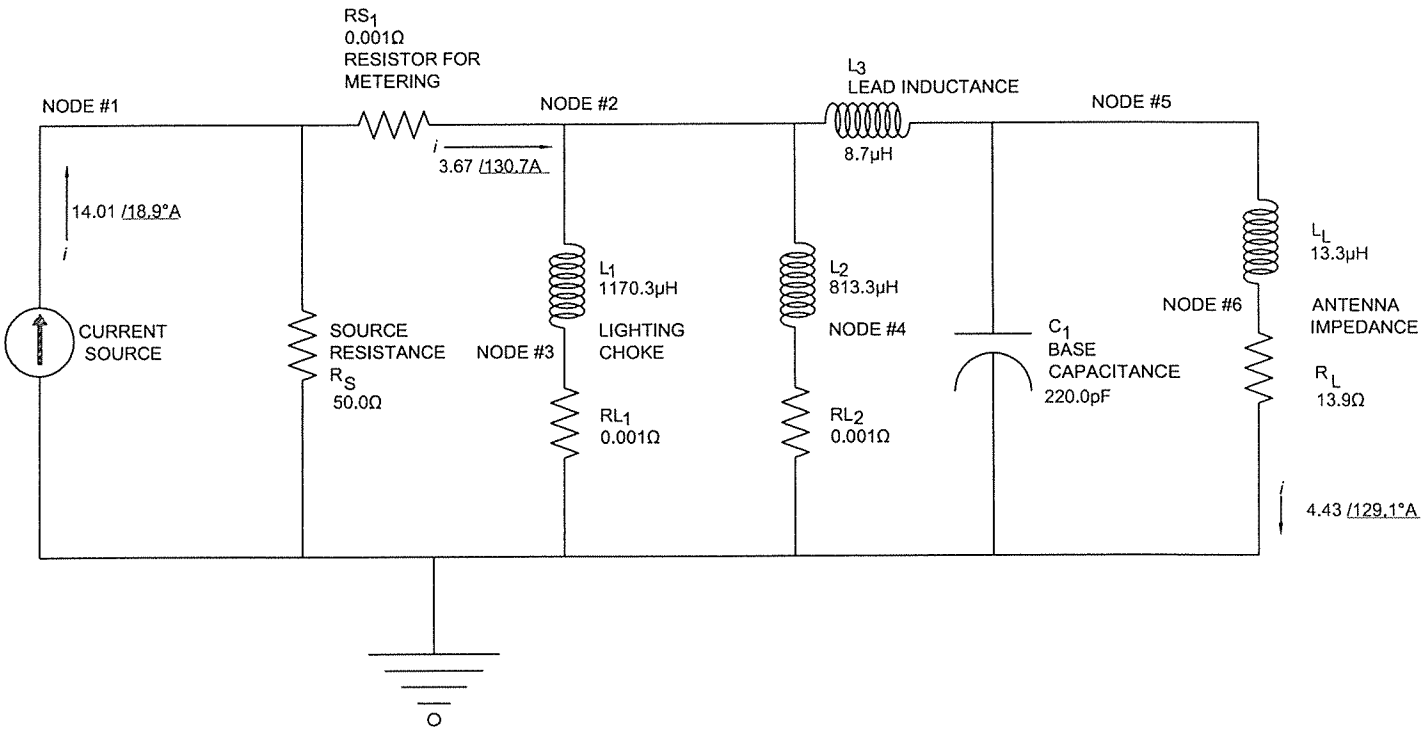
Daytime Tower 1

Input

```
## WYOS DAYTIME TOWER 1 BASE MODEL
.OPT LIST NOPAGE NODE NOMOD
.AC LIN 1 1360kHz 1360kHz

IIN     1       0       AC 16.06722 22
rs      1       0       50
rs1     1       2       .001

L1      2       3       813.3uH
RL1     3       0       .001
L2      2       4       1170.3uH
RL2     4       0       .001

L3      2       5       8.7uH
C1      5       0       220pF

LL      5       6       13.3uH
RL      6       0       13.9ohms

.PRINT AC VM(2,0) VP(2,0) VM(4,0) VP(4,0)
.PRINT AC IM(L1) IP(L1) IM(L2) IP(L2)
.PRINT AC IM(RS1) IP(RS1) IM(RL) IP(RL)
##.PROBE
.END
```

Output

FREQ	IM(RS1)	IP(RS1)	IM(RL)	IP(RL)
1.360E+06	3.672E+00	1.307E+02	4.431E+00	1.291E+02



Bob Allen, H&D 10/17/2011 10:25 AM WYOS TOWER CIRCUITS.dwg

Hatfield & Dawson Consulting Engineers	WYOS(AM) TOWER #1 DAY PSPICE MODEL WYOS(AM) 1360 kHz BINGHAMTON, NY 7/2015	REVISIONS: JULY 27, 2015

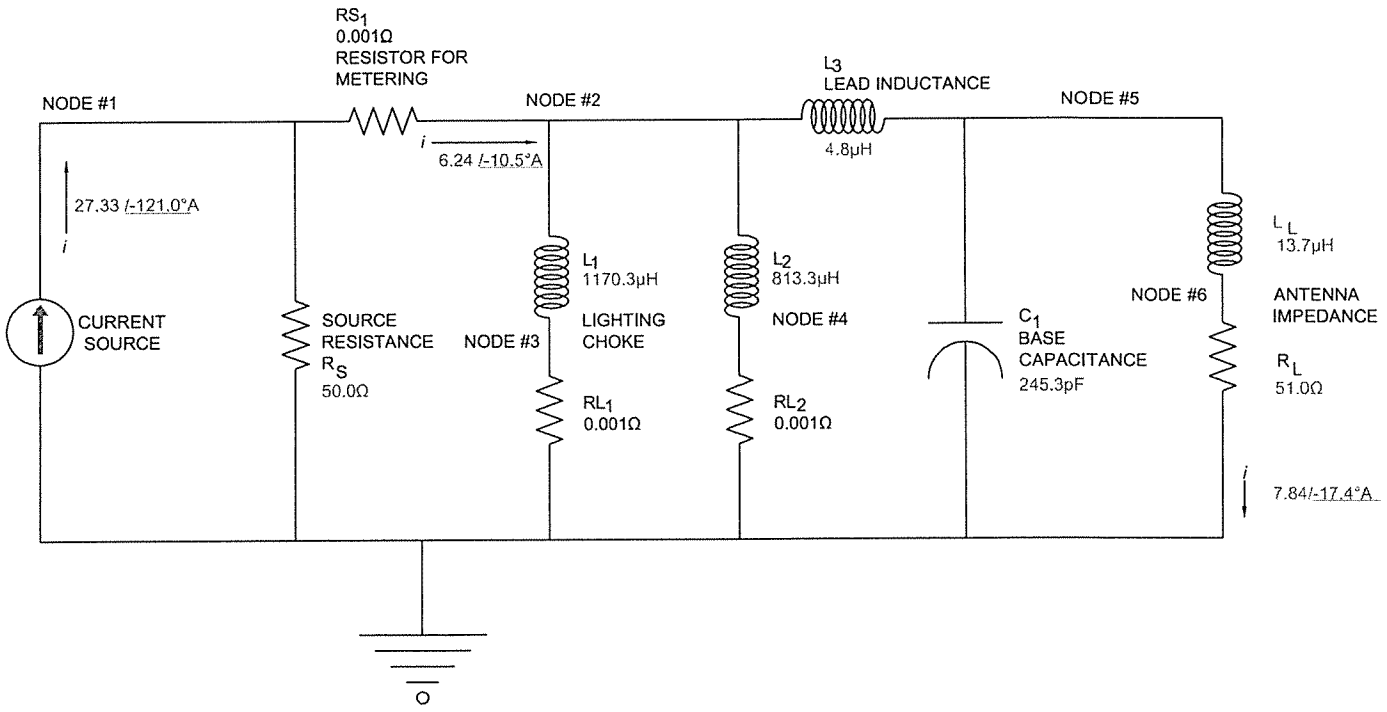
Daytime Tower 2

Input

```
## WYOS DAYTIME TOWER 2 BASE MODEL
.OPT LIST NOPAGE NODE NOMOD
.AC LIN 1 1360kHz 1360kHz

IIN      1        0        AC 27.49179 -136.82
rs       1        0        50
rs1      1        2        .001

L1       2        3        813.3uH
RL1      3        0        .001
L2       2        4        1170.3uH
RL2      4        0        .001

L3       2        5        4.8uH
C1       5        0        245.3pF

LL       5        6        13.7uH
RL       6        0        51ohms

.PRINT AC VM(2,0) VP(2,0) VM(4,0) VP(4,0)
.PRINT AC IM(L1) IP(L1) IM(L2) IP(L2)
.PRINT AC IM(RS1) IP(RS1) IM(RL) IP(RL)
##.PROBE
.END
```

Output

FREQ	IM(RS1)	IP(RS1)	IM(RL)	IP(RL)
1.360E+06	6.241E+00	-1.052E+01	7.836E+00	-1.740E+01



Bob Allen, H&D 10/17/2011 10:25 AM WYOS TOWER CIRCUITS.dwg

Hatfield & Dawson Consulting Engineers	WYOS(AM) TOWER #2 DAY PSPICE MODEL WYOS(AM) 1360 kHz BINGHAMTON, NY 7/2015	REVISIONS:JULY 27, 2015

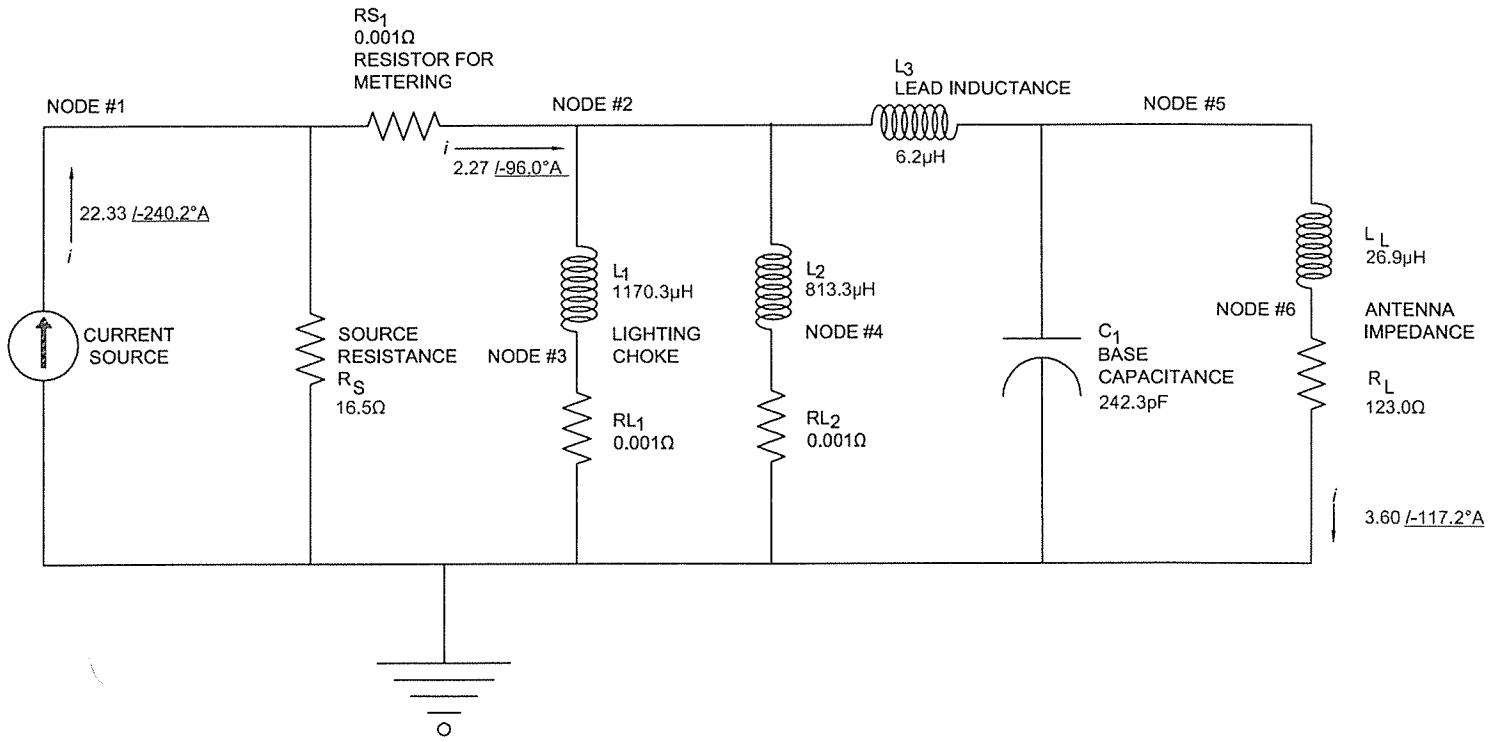
Daytime Tower 3

Input

```
## WYOS DAYTIME TOWER 3 BASE MODEL
.OPT LIST NOPAGE NODE NOMOD
.AC LIN 1 1360kHz 1360kHz

IIN     1       0       AC 21.7990943 -234.5
rs      1       0       50
rs1     1       2       .001

L1      2       3       813.3uH
RL1     3       0       .001
L2      2       4       1170.3uH
RL2     4       0       .001

L3      2       5       6.2uH
C1      5       0       242.3pF

LL      5       6       26.9uH
RL      6       0       123.0ohms

.PRINT AC VM(2,0) VP(2,0) VM(4,0) VP(4,0)
.PRINT AC IM(L1) IP(L1) IM(L2) IP(L2)
.PRINT AC IM(RS1) IP(RS1) IM(RL) IP(RL)
##.PROBE
.END
```

Output

FREQ	IM(RS1)	IP(RS1)	IM(RL)	IP(RL)
1.360E+06	2.267E+00	-9.597E+01	3.600E+00	-1.172E+02



Bob Allen, H&D 10/17/2011 10:25 AM WYOS TOWER CIRCUITS.dwg

Hatfield & Dawson Consulting Engineers	WYOS(AM) TOWER #3 DAY PSPICE MODEL WYOS(AM) 1360 kHz BINGHAMTON, NY 07/2015	REVISIONS: JULY 27, 2015

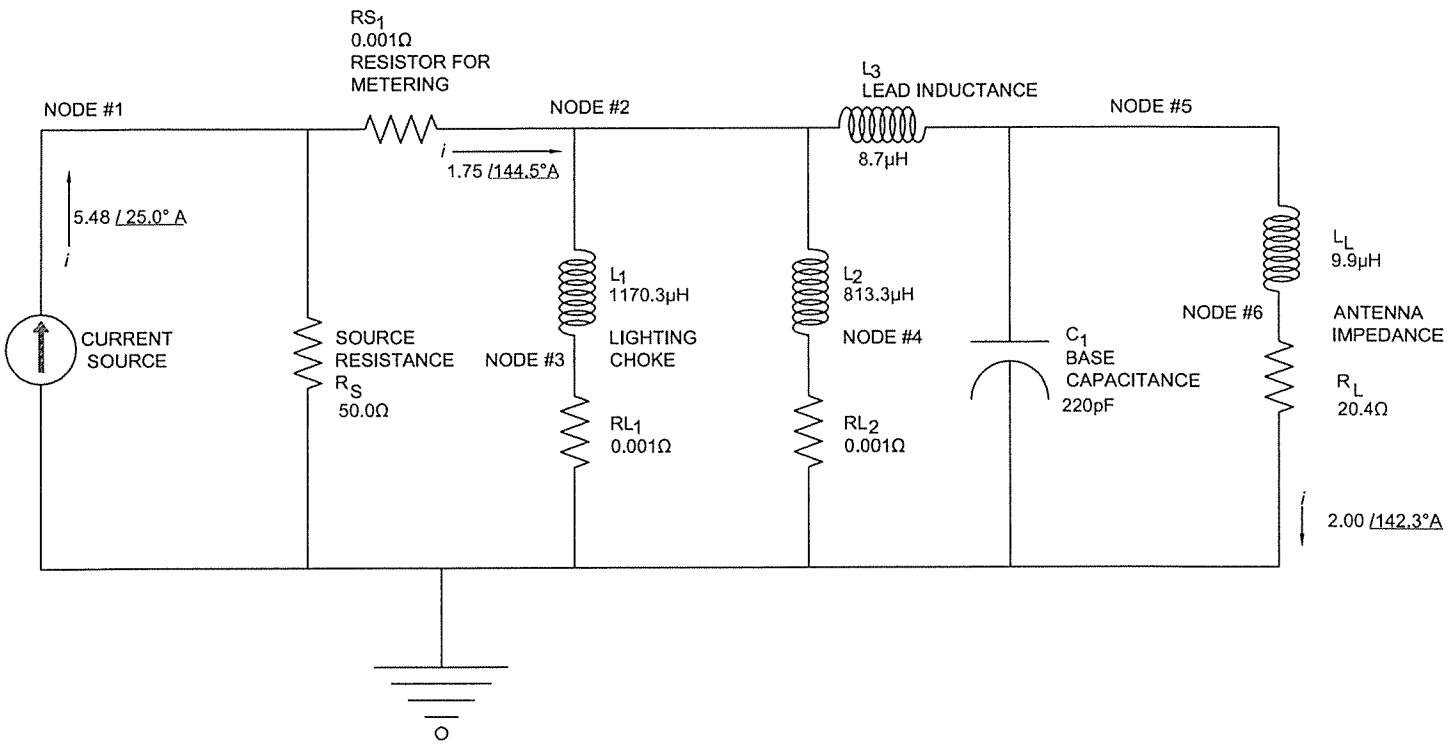
Nighttime Tower 1

Input

```
## WYOS NIGHTTIME TOWER 1 BASE MODEL
.OPT LIST NOPAGE NODE NOMOD
.AC LIN 1 1360kHz 1360kHz

IIN     1       0       AC 6.434804 29.9
rs      1       0       50
rs1     1       2       .001

L1      2       3       813.3uH
RL1     3       0       .001
L2      2       4       1170.3uH
RL2     4       0       .001

L3      2       5       8.7uH
C1      5       0       220.0pF

LL      5       6       9.9uH
RL      6       0       20.4ohms

.PRINT AC VM(2,0) VP(2,0) VM(4,0) VP(4,0)
.PRINT AC IM(L1) IP(L1) IM(L2) IP(L2)
.PRINT AC IM(RS1) IP(RS1) IM(RL) IP(RL)
##.PROBE
.END
```

Output

FREQ	IM(RS1)	IP(RS1)	IM(RL)	IP(RL)
1.360E+06	1.754E+00	1.445E+02	1.999E+00	1.423E+02



Bob Allen, H&D 10/17/2011 10:25 AM WYOS TOWER CIRCUITS.dwg

Hatfield & Dawson Consulting Engineers	WYOS(AM) TOWER #1 NIGHT PSPICE MODEL WYOS(AM) 1360 kHz BINGHAMTON, NY 7/2015	REVISIONS:JULY 27, 2015

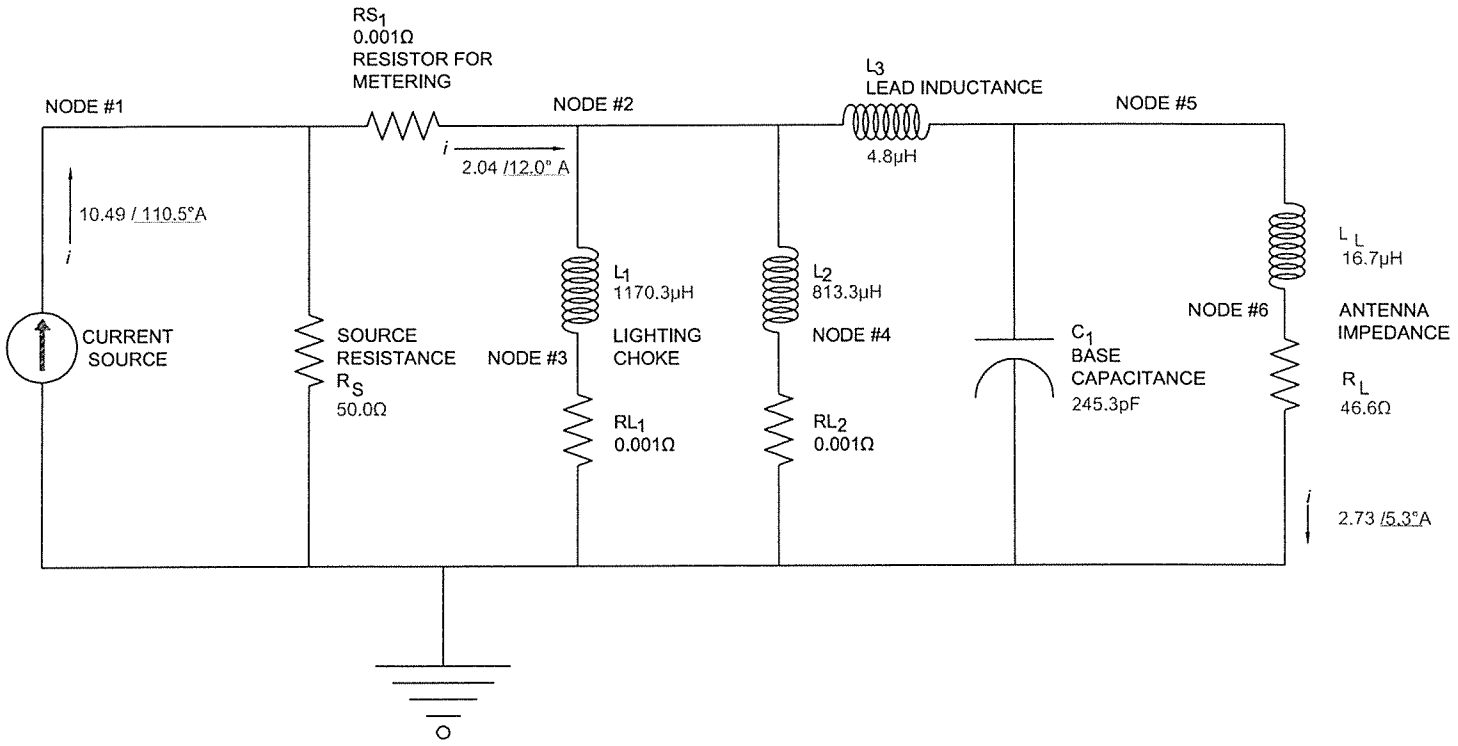
Nighttime Tower 2

Input

```
### WYOS NIGHTTIME TOWER 2 BASE MODEL
.OPT LIST NOPAGE NODE NOMOD
.AC LIN 1 1360kHz 1360kHz

IIN      1        0        AC 10.54378 -109.093
rs       1        0        50
rs1      1        2        .001

L1       2        3        813.3uH
RL1      3        0        .001
L2       2        4        1170.3uH
RL2      4        0        .001

L3       2        5        4.8uH
C1       5        0        245.3pF

LL       5        6        16.7uH
RL       6        0        46.6ohms

.PRINT AC VM(2,0) VP(2,0) VM(4,0) VP(4,0)
.PRINT AC IM(L1) IP(L1) IM(L2) IP(L2)
.PRINT AC IM(RS1) IP(RS1) IM(RL) IP(RL)
##.PROBE
.END
```

Output

FREQ	IM(RS1)	IP(RS1)	IM(RL)	IP(RL)
1.360E+06	2.042E+00	1.200E+01	2.731E+00	5.300E+00



Bob Allen, H&D 10/17/2011 10:25 AM WYOS TOWER CIRCUITS.dwg

Hatfield & Dawson Consulting Engineers	WYOS(AM) TOWER #2 NIGHT PSPICE MODEL WYOS(AM) 1360 kHz BINGHAMTON, NY 7/2015	REVISIONS:JULY 27, 2015

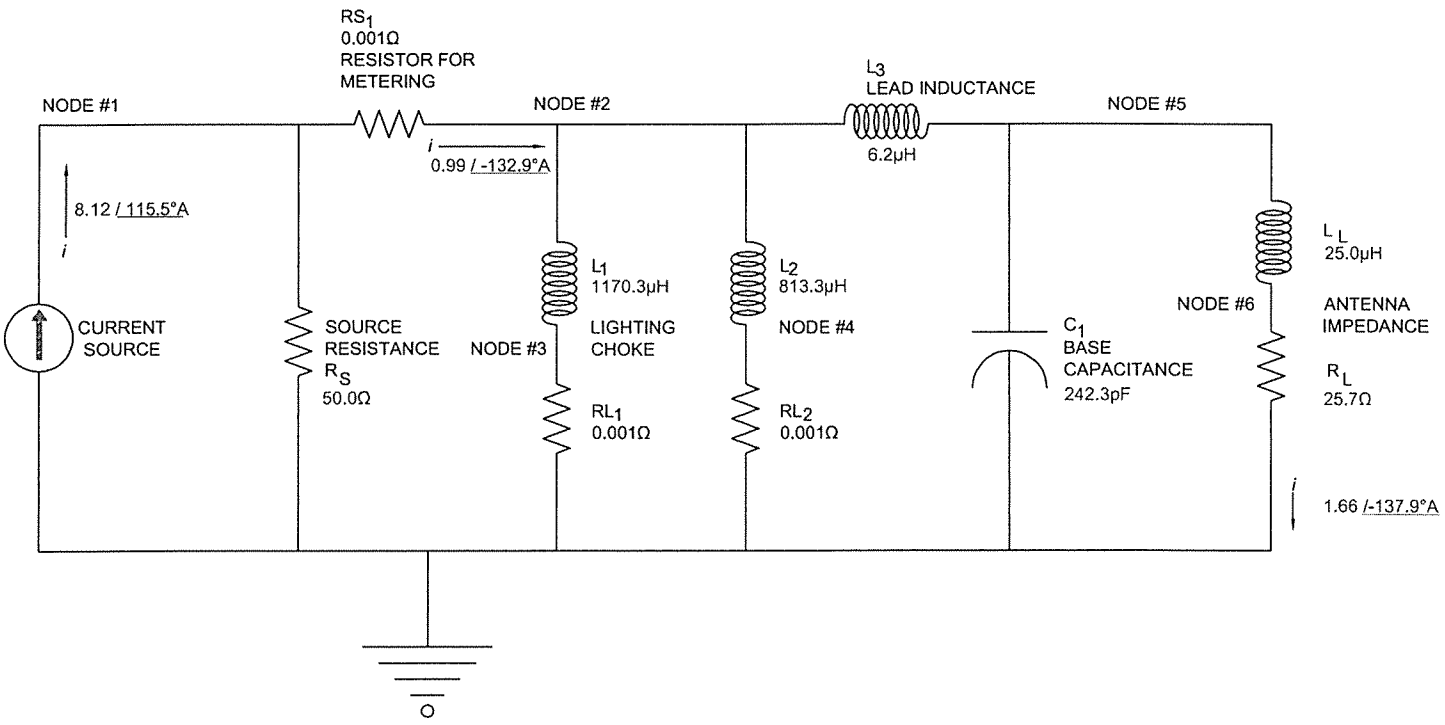
Nighttime Tower 3

Input

```
### WYOS NIGHTTIME TOWER 3 BASE MODEL
.OPT LIST NOPAGE NODE NOMOD
.AC LIN 1 1360kHz 1360kHz

IIN      1        0        AC 8.068766 -240.3
rs       1        0        50
rs1      1        2        .001

L1       2        3        813.3uH
RL1      3        0        .001
L2       2        4        1170.3uH
RL2      4        0        .001

L3       2        5        6.2uH
C1       5        0        242.3pF

LL       5        6        25.0uH
RL       6        0        27.6ohms

.PRINT AC VM(2,0) VP(2,0) VM(4,0) VP(4,0)
.PRINT AC IM(L1) IP(L1) IM(L2) IP(L2)
.PRINT AC IM(RS1) IP(RS1) IM(RL) IP(RL)
##.PROBE
.END
```

Output

```
      FREQ         IM(RS1)      IP(RS1)      IM(RL)       IP(RL)
      1.360E+06    9.915E-01  -1.329E+02    1.602E+00  -1.376E+02
```



Bob Allen, H&D 10/17/2011 10:25 AM WYOS TOWER CIRCUITS.dwg

Hatfield & Dawson Consulting Engineers	WYOS(AM) TOWER #3 NIGHT PSPICE MODEL WYOS(AM) 1360 kHz BINGHAMTON, NY 7/2015	REVISIONS: JULY 27, 2015

Calculated Antenna Monitor Parameters

Daytime

	Modeled Current Pulse	Sample Current Calculated at TCT (Amps)		Antenna Monitor Parameters	
		Magnitude	Phase (°)	Ratio	Phase (°)
Tower 1 South	Node 1	3.672	130.7°	0.588	141.2°
Tower 2 Center	Node 22	6.241	-10.5°	1.000	0.0°
Tower 3 North	Node 43	2.267	-96.0°	0.363	-85.5°

Nighttime

	Modeled Current Pulse	Sample Current Calculated at TCT (Amps)		Antenna Monitor Parameters	
		Magnitude	Phase (°)	Ratio	Phase (°)
Tower 1 South	Node 1	1.754	144.5°	0.859	132.5°
Tower 2 Center	Node 22	2.042	12.0°	1.000	0.0°
Tower 3 North	Node 43	0.992	-132.9°	0.486	-144.9°

ITEM 3- Moment Method Model for Tower Driven Individually

Expert MININEC Broadcast Professional Version 14 was used to model the WYOS array. The antenna model was adjusted to match the measured matrix impedances. The wire coordinates used are in electrical degrees and wire radius is in meters The physical height of the triangular cross section towers is 98°, the face widths are 18, 32 and 18 inches respectively. The following adjusted parameters were used:

- antenna electrical height on towers was adjusted to:
  - Tower #1 106.4% of the physical height (98°) for a model height of 104.3°
  - Tower #2 107.9% of the physical height (98°) for a model height of 105.7°
  - Tower #3 106.4% of the physical height (98°) for a model height of 104.3°
- all three tower are of differing face widths and were modeled at 100.0%:of the equivalent radius of each tower:
  - Tower #1 Face width 18" of equivalent radius of 22 cm
  - Tower #2 Face width 32" of equivalent radius of 39 cm
  - Tower #3 Face width 18" of equivalent radius of 22 cm
- 21 segments per antenna element for:
  - Tower #1 4.7° per segment
  - Tower #2 5.0° per segment
  - Tower #3 4.7° per segment

South Tower #1 Model

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-Z II July 15 07-17-2015
13:18:56

WYOS

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.22	21
		0	0	104.3		
2	none	90.	1.	0	.39	21
		90.	1.	105.7		
3	none	180.	1.	0	.22	21
		180.	1.	104.3		

Number of wires = 3
current nodes = 63

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.96667	2	5.03333
radius	1	.22	2	.39

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,360.	0	1	.0137963	.0139815

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	22	0	-539.1	0	0	0
2	43	0	-546.6	0	0	0

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-Z II July 15 07-17-2015
13:18:56

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,360.	69.426	102.61	123.89	55.9	4.9392	-3.5664	-2.5174

Center Tower #2 Model

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-Z II July 15 07-17-2015
13:20:49

WYOS

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.22	21
		0	0	104.3		
2	none	90.	1.	0	.39	21
		90.	1.	105.7		
3	none	180.	1.	0	.22	21
		180.	1.	104.3		

Number of wires = 3
current nodes = 63

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.96667	2	5.03333
radius	1	.22	2	.39

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,360.	0	1	.0137963	.0139815

Sources

source	node	sector	magnitude	phase	type
1	22	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-609.7	0	0	0
2	43	0	-546.6	0	0	0

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-Z II July 15 07-17-2015
13:20:59

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 22, sector 1							
1,360.	64.81	103.07	121.75	57.8	5.1519	-3.4153	-2.6399

North Tower #3 Model

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-Z II July 15 07-17-2015
13:23:59

WYOS

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.22	21
		0	0	104.3		
2	none	90.	1.	0	.39	21
		90.	1.	105.7		
3	none	180.	1.	0	.22	21
		180.	1.	104.3		

Number of wires = 3
current nodes = 63

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	4.96667	2	5.03333
radius	1	.22	2	.39

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,360.	0	1	.0137963	.0139815

Sources

source	node	sector	magnitude	phase	type
1	43	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-609.7	0	0	0
2	22	0	-539.1	0	0	0

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-Z II July 15 07-17-2015
13:23:59

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 43, sector 1							
1,360.	69.055	102.83	123.87	56.1	4.9664	-3.5463	-2.5333

ITEM 4 - Moment Method Model for Directional Array

Daytime MNEC Summary & Current Moments

```
C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-D II July 15  07-17-2015
13:38:03

WYOS

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

wire  caps Distance     Angle        Z            radius       segs
 1    none 0            0            0            .22           21
           0            0            104.3
 2    none 90.          1.           0            .39           21
           90.          1.           105.7
 3    none 180.         1.           0            .22           21
           180.         1.           104.3

Number of wires          =  3
          current nodes  =  63

                         minimum                  maximum
Individual wires      wire    value             wire  value
segment length         1      4.96667            2    5.03333
radius                 1      .22                2    .39


ELECTRICAL DESCRIPTION
Frequencies (KHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   1,360.       0             1      .0137963       .0139815

Sources
source node    sector  magnitude      phase          type
 1      1       1      718.553        212.2          voltage
 2      22      1      1,412.65       49.            voltage
 3      43      1      1,325.88       304.6          voltage

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-D II July 15  07-17-2015
13:40:49

IMPEDANCE
   normalization = 50.
freq     resist   react    imped    phase    VSWR    S11      S12
(KHz)    (ohms)   (ohms)   (ohms)   (deg)             dB       dB
source =  1; node 1, sector 1
1,360.   13.925   113.83   114.68   83.      22.434  -.77485  -7.8673

source =  2; node 22, sector 1
1,360.   51.017   116.82   127.47   66.4     7.2117  -2.4245  -3.6877
```

source = 3; node 43, sector 1
1,360. 122.98 229.54 260.41 61.8 11.347 -1.5349 -5.2618

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-D II July 15 07-17-2015 13:40:49

CURRENT rms
Frequency = 1360 KHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	4.43067	129.1	-2.79644	3.43668
2	0	0	4.96667	4.71906	128.7	-2.94978	3.68352
3	0	0	9.93333	4.8668	128.4	-3.0252	3.81234
4	0	0	14.9	4.95601	128.2	-3.06677	3.89319
5	0	0	19.8667	4.99579	128.1	-3.07945	3.93381
6	0	0	24.8333	4.99032	127.9	-3.06554	3.93774
7	0	0	29.8	4.94198	127.8	-3.02642	3.90692
8	0	0	34.7667	4.85246	127.6	-2.96308	3.84273
9	0	0	39.7333	4.72326	127.5	-2.87646	3.74635
10	0	0	44.7	4.55582	127.4	-2.76746	3.61893
11	0	0	49.6667	4.35166	127.3	-2.63706	3.46163
12	0	0	54.6333	4.11238	127.2	-2.48627	3.2757
13	0	0	59.6	3.83967	127.1	-2.31616	3.06242
14	0	0	64.5667	3.5353	127.	-2.12788	2.8232
15	0	0	69.5333	3.20106	126.9	-1.92256	2.55941
16	0	0	74.5	2.83872	126.8	-1.70133	2.27241
17	0	0	79.4667	2.44983	126.7	-1.46518	1.9634
18	0	0	84.4333	2.03553	126.6	-1.21486	1.63325
19	0	0	89.4	1.59596	126.6	-.950536	1.28202
20	0	0	94.3667	1.1289	126.5	-.670958	.907869
21	0	0	99.3333	.626124	126.4	-.371343	.504119
END	0	0	104.3	0	0	0	0
GND	89.9863	-1.5707	0	7.83608	342.6	7.4778	-2.34236
23	89.9863	-1.5707	5.03333	8.54809	340.5	8.05664	-2.85665
24	89.9863	-1.5707	10.0667	8.88486	339.4	8.3194	-3.11902
25	89.9863	-1.5707	15.1	9.10498	338.6	8.47998	-3.31521
26	89.9863	-1.5707	20.1333	9.22618	338.	8.55366	-3.45792
27	89.9863	-1.5707	25.1667	9.25824	337.4	8.54885	-3.55417
28	89.9863	-1.5707	30.2	9.20653	336.9	8.47037	-3.60736
29	89.9863	-1.5707	35.2333	9.07441	336.5	8.32131	-3.61951
30	89.9863	-1.5707	40.2667	8.86483	336.1	8.10444	-3.59212
31	89.9863	-1.5707	45.3	8.5805	335.7	7.82237	-3.52641
32	89.9863	-1.5707	50.3333	8.22411	335.4	7.47766	-3.42355
33	89.9863	-1.5707	55.3667	7.79862	335.1	7.07312	-3.28473
34	89.9863	-1.5707	60.4	7.307	334.8	6.61158	-3.11117
35	89.9863	-1.5707	65.4333	6.75238	334.5	6.09596	-2.90411
36	89.9863	-1.5707	70.4667	6.13791	334.3	5.52924	-2.66485
37	89.9863	-1.5707	75.5	5.46664	334.	4.91427	-2.39459
38	89.9863	-1.5707	80.5333	4.74117	333.8	4.2535	-2.09439
39	89.9863	-1.5707	85.5667	3.96313	333.6	3.54849	-1.76482
40	89.9863	-1.5707	90.6	3.13202	333.3	2.79894	-1.40554
41	89.9863	-1.5707	95.6333	2.24195	333.1	1.99971	-1.01366

42	89.9863	-1.5707	100.667	1.27802	332.9	1.13772	-.582164
END	89.9863	-1.5707	105.7	0	0	0	0
GND	179.973	-3.1414	0	3.60021	242.8	-1.64569	-3.20206
44	179.973	-3.1414	4.96667	4.09116	239.1	-2.10081	-3.51059
45	179.973	-3.1414	9.93333	4.37544	237.2	-2.36887	-3.67871
46	179.973	-3.1414	14.9	4.58472	235.8	-2.57527	-3.79311
47	179.973	-3.1414	19.8667	4.73257	234.7	-2.73353	-3.86329
48	179.973	-3.1414	24.8333	4.82485	233.8	-2.84948	-3.89354
49	179.973	-3.1414	29.8	4.86447	233.	-2.92593	-3.88613
50	179.973	-3.1414	34.7667	4.85327	232.3	-2.96458	-3.8426
51	179.973	-3.1414	39.7333	4.79268	231.8	-2.9666	-3.76419
52	179.973	-3.1414	44.7	4.68403	231.2	-2.933	-3.65208
53	179.973	-3.1414	49.6667	4.52867	230.8	-2.86472	-3.50746
54	179.973	-3.1414	54.6333	4.32805	230.3	-2.76275	-3.33155
55	179.973	-3.1414	59.6	4.08372	229.9	-2.62813	-3.12566
56	179.973	-3.1414	64.5667	3.79735	229.6	-2.46196	-2.89113
57	179.973	-3.1414	69.5333	3.47065	229.3	-2.26538	-2.62934
58	179.973	-3.1414	74.5	3.1053	228.9	-2.03952	-2.34163
59	179.973	-3.1414	79.4667	2.7028	228.7	-1.7854	-2.02916
60	179.973	-3.1414	84.4333	2.26418	228.4	-1.50368	-1.69276
61	179.973	-3.1414	89.4	1.78934	228.1	-1.19433	-1.33241
62	179.973	-3.1414	94.3667	1.27548	227.9	-.855416	-.946109
63	179.973	-3.1414	99.3333	.712863	227.6	-.480302	-.526767
END	179.973	-3.1414	104.3	0	0	0	0

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-D II July 15 07-17-2015
13:38:13

CURRENT MOMENTS(amp-degrees) rms

Frequency = 1360 KHz
Input power = 5,000. watts

			vertical current moment	
wire	magnitude	phase (deg)	magnitude	phase (deg)
1	324.843	127.6	324.843	127.6
2	617.2	336.5	617.2	336.5
3	324.842	232.4	324.842	232.4

Medium wave array vertical current moment (amps-degrees) rms
(Calculation assumes tower wires are grouped together.
The first wire of each group must contain the source.)

tower	magnitude	phase (deg)
1	324.843	127.6
2	617.2	336.5
3	324.842	232.4

Nighttime MNEC Summary & Current Moments:

```
C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-N II July 15  07-17-2015
13:44:27

WYOS

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

wire  caps Distance     Angle        Z            radius      segs
 1    none 0            0            0            .22          21
           0            0            104.3
 2    none 90.          1.           0            .39          21
           90.          1.           105.7
 3    none 180.         1.           0            .22          21
           180.         1.           104.3

Number of wires          =  3
          current nodes  =  63

                          minimum                  maximum
Individual wires       wire    value             wire  value
segment length          1      4.96667            2    5.03333
radius                  1      .22                2    .39


ELECTRICAL DESCRIPTION
Frequencies (KHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   1,360.       0             1      .0137963       .0139815

Sources
source node    sector  magnitude      phase          type
 1      1       1      245.825        218.7          voltage
 2      22      1      581.354        77.3           voltage
 3      43      1      488.255        305.1          voltage

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-N II July 15  07-17-2015
13:45:48

IMPEDANCE
   normalization = 50.
freq     resist   react    imped    phase    VSWR    S11      S12
(KHz)    (ohms)   (ohms)   (ohms)   (deg)            dB       dB
source =  1; node 1, sector 1
1,360.   20.424   84.539   86.971   76.4     9.7523  -1.7876  -4.7184

source =  2; node 22, sector 1
1,360.   46.597   143.14   150.53   72.      10.705  -1.6274  -5.0511

source =  3; node 43, sector 1
1,360.   27.644   213.78   215.56   82.6     35.398  -.49089  -9.7111
```

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-N II July 15 07-17-2015
13:45:48

CURRENT rms
Frequency = 1360 KHz
Input power = 500. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	1.99865	142.3	-1.58123	1.22243
2	0	0	4.96667	2.09396	141.6	-1.64163	1.2999
3	0	0	9.93333	2.13942	141.2	-1.66826	1.33941
4	0	0	14.9	2.16251	140.9	-1.67885	1.36306
5	0	0	19.8667	2.16633	140.7	-1.67543	1.37329
6	0	0	24.8333	2.15233	140.4	-1.65897	1.37125
7	0	0	29.8	2.12136	140.2	-1.63009	1.35756
8	0	0	34.7667	2.07408	140.	-1.58926	1.33268
9	0	0	39.7333	2.01108	139.8	-1.53695	1.29702
10	0	0	44.7	1.93298	139.7	-1.4736	1.25096
11	0	0	49.6667	1.84039	139.5	-1.39974	1.1949
12	0	0	54.6333	1.73399	139.4	-1.31587	1.12926
13	0	0	59.6	1.6145	139.2	-1.22256	1.05449
14	0	0	64.5667	1.48264	139.1	-1.12038	.971063
15	0	0	69.5333	1.33918	139.	-1.00993	.87945
16	0	0	74.5	1.18484	138.8	-.891782	.780109
17	0	0	79.4667	1.02027	138.7	-.766433	.673444
18	0	0	84.4333	.845945	138.6	-.634275	.559748
19	0	0	89.4	.661926	138.4	-.495369	.439039
20	0	0	94.3667	.467297	138.3	-.349061	.310681
21	0	0	99.3333	.258677	138.2	-.192862	.17239
END	0	0	104.3	0	0	0	0
GND	89.9863	-1.5707	0	2.73084	5.3	2.71921	.251786
23	89.9863	-1.5707	5.03333	3.03568	3.4	3.0304	.17903
24	89.9863	-1.5707	10.0667	3.1833	2.5	3.18031	.13799
25	89.9863	-1.5707	15.1	3.28429	1.8	3.28267	.102989
26	89.9863	-1.5707	20.1333	3.34618	1.2	3.3454	.0723201
27	89.9863	-1.5707	25.1667	3.37323	.8	3.37293	.0450815
28	89.9863	-1.5707	30.2	3.36761	.4	3.36754	.0208938
29	89.9863	-1.5707	35.2333	3.33074	360.	3.33074	-4.2E-04
30	89.9863	-1.5707	40.2667	3.26377	359.7	3.26372	-.0189404
31	89.9863	-1.5707	45.3	3.16774	359.4	3.16755	-.0346994
32	89.9863	-1.5707	50.3333	3.0437	359.1	3.04332	-.0477058
33	89.9863	-1.5707	55.3667	2.89273	358.9	2.89215	-.0579577
34	89.9863	-1.5707	60.4	2.71597	358.6	2.71518	-.0654504
35	89.9863	-1.5707	65.4333	2.5146	358.4	2.51362	-.0701797
36	89.9863	-1.5707	70.4667	2.28981	358.2	2.28867	-.0721433
37	89.9863	-1.5707	75.5	2.04274	358.	2.0415	-.07134
38	89.9863	-1.5707	80.5333	1.77439	357.8	1.77309	-.0677629
39	89.9863	-1.5707	85.5667	1.48537	357.6	1.4841	-.0613895
40	89.9863	-1.5707	90.6	1.1755	357.5	1.17434	-.0521562
41	89.9863	-1.5707	95.6333	.842557	357.3	.841613	-.0398859
42	89.9863	-1.5707	100.667	.480925	357.1	.480316	-.0242037
END	89.9863	-1.5707	105.7	0	0	0	0
GND	179.973	-3.1414	0	1.60165	222.4	-1.18198	-1.08084
44	179.973	-3.1414	4.96667	1.80144	221.6	-1.34708	-1.19606

45	179.973	-3.1414	9.93333	1.91355	221.2	-1.44055	-1.25957
46	179.973	-3.1414	14.9	1.99364	220.8	-1.50833	-1.30367
47	179.973	-3.1414	19.8667	2.04773	220.6	-1.55542	-1.33187
48	179.973	-3.1414	24.8333	2.07851	220.4	-1.58401	-1.34577
49	179.973	-3.1414	29.8	2.08734	220.2	-1.59523	-1.3462
50	179.973	-3.1414	34.7667	2.07513	220.	-1.58978	-1.3337
51	179.973	-3.1414	39.7333	2.04256	219.8	-1.56822	-1.30872
52	179.973	-3.1414	44.7	1.99028	219.7	-1.53104	-1.27168
53	179.973	-3.1414	49.6667	1.91894	219.6	-1.47872	-1.22299
54	179.973	-3.1414	54.6333	1.82919	219.5	-1.4118	-1.16309
55	179.973	-3.1414	59.6	1.72175	219.4	-1.33079	-1.09243
56	179.973	-3.1414	64.5667	1.59734	219.3	-1.23629	-1.01149
57	179.973	-3.1414	69.5333	1.45676	219.2	-1.12887	-.920759
58	179.973	-3.1414	74.5	1.30072	219.1	-1.00911	-.820704
59	179.973	-3.1414	79.4667	1.12989	219.	-.877534	-.711753
60	179.973	-3.1414	84.4333	.944734	219.	-.734479	-.594191
61	179.973	-3.1414	89.4	.745247	218.9	-.579954	-.468024
62	179.973	-3.1414	94.3667	.530288	218.8	-.413059	-.332548
63	179.973	-3.1414	99.3333	.295857	218.8	-.230665	-.18527
END	179.973	-3.1414	104.3	0	0	0	0

C:\AM\WYOS 1360 kHz Binghamton NY\MNEC\WYOS-N II July 15 07-17-2015
13:44:32

CURRENT MOMENTS(amp-degrees) rms

Frequency = 1360 KHz
Input power = 500. watts

			vertical current moment	
wire	magnitude	phase (deg)	magnitude	phase (deg)
1	138.915	140.	138.915	140.
2	226.431	360.	226.431	360.
3	138.915	220.	138.915	220.

Medium wave array vertical current moment (amps-degrees) rms
(Calculation assumes tower wires are grouped together.
The first wire of each group must contain the source.)

tower	magnitude	phase (deg)
1	138.915	140.
2	226.431	360.
3	138.915	220

ITEM 5 - Sampling System Measurements

Measurements were made using a Array Solutions VNA-2180 vector network analyzer in a calibrated measurement system. The sample lines were found to be series resonant (an odd multiple of 90° which is an impedance zero - very low resistance and zero reactance) around 726 kHz which indications the line is 90° in electrical length at this frequency. The characteristic impedance was calculated using the following formula, where $R_1 \pm jX_1$ and $R_2 \pm X_2$ are the measured impedances at the -45° and +45° offset frequencies:

$$Z_0 = \sqrt{\sqrt{R_1^2 + X_1^2} \bullet \sqrt{R_2^2 + X_2^2}}$$

The measured open circuit sample line impedances and characteristic impedance calculations are shown below:

Lines from ATUs to Transmitter Building

	Resonance Frequency (kHz)	-45° Offset Frequency (kHz)	-45° Offset Impedance ($R_1 \pm jX_1$) (Ohms)	+45° Offset Frequency (kHz)	+45° Offset Impedance ($R_2 \pm jX_2$) (Ohms)	Characteristic Impedance ($Z_\varnothing$)
Sample Line 1 (South Tower)	728.041	364.021	0.7 - j 50.1	1092.062	3.8 + j 49.4	49.8 ohms
Sample Line 2 (Center Tower)	728.412	364.206	0.7 - j 50.5	1092.618	3.8 + j 49.8	50.2 ohms
Sample Line 3 (North Tower)	728.426	364.213	0.7 - j 50.2	1092.639	3.8 + j 49.7	50.0 ohms

The sample line lengths calculated from the measurements above are:

Length in Electrical Degrees at 1360 kHz	Length from ATU to Transmitter Building	Measured Impedance (Z_S) With TCT Attached
Sample Line 1	168.1°.	49.2 + j 0.3 ohms
Sample Line 2	168.0°	49.0 + j 0.7 ohms
Sample Line 3	168.0°	48.6 + j 0.4 ohms

ITEM 6 - Reference Field Strength Measurements

Day 1°

Latitude	Longitude	km to TX	Date	Time	Field (mV/m)	Point Description
N42° 05' 48.4'	W75° 54' 19.5	3.32	5 Dec 15	1041	96.6	Across from intersection of Susquehanna St. and Tudor St.
N42° 06' 24.5'	W75° 54' 18.6	4.43	5 Dec 15	1121	80.6	289 Chenago St.
N42° 07' 10.7'	W75° 54' 18.6	5.86	5 Dec 15	1314	54.3	Sidewalk at VFW Memorial Bridge, north side of Bevier St., just east of the entrance to Otsiningo Park

Day 100°

N42° 3' 41.7	W75° 51' 55.1	3.42	5 Dec 15	1201	40.8	Near 4278 Gratsinger Rd/CR 157
N42° 3' 35.5	W75° 51' 12.1	4.43	5 Dec 15	1238	17.4	Driveway entrance of 42 Ruth Ct.
N42° 3' 30.4	W75° 50' 28.3	5.44	5 Dec 15	1321	11.6	Across from driveway entrance of 703 Powers Rd/CR 161

Day 260°

N42° 3' 44.4	W75° 56' 28.6	2.95	5 Dec 15	1302	49.8	Ingraham Hill Road - no address
N42° 3' 33.5	W75° 57' 52.0	4.89	5 Dec 15	1350	4.15	Powderhouse Road - no address
N42° 3' 29.8	W75° 58' 20.2	5.55	5 Dec 15	1421	5.85	Between the two driveway entrances to 85 Brown Rd.

Night 1°

Latitude	Longitude	km to TX	Date	Time	Field (mV/m)	Point Discription
N42° 5' 48.4	W75° 54' 19.5	3.32	7 Nov 15	12:40p	34.7	Across from intersection of Susquehanna St. and Tudor St.
N42° 6' 24.5	W75° 54' 18.6	4.43	7 Nov 15	12:50p	26.4	289 Chenego St.
N42° 7' 10.7	W75° 54' 17.6	5.86	7 Nov 15	1:00p	17.3	Sidewalk at VFW Memorial Bridge, north side of Bevier St., just east of the entrance to Otsiningo Park

Night 96°

N42° 3' 50.2	W75° 52' 3.3	3.20	7 Nov 15	11:59a	2.98	Coleman Road - no address
N42° 3' 44.1	W75° 50' 45.5	4.99	7 Nov 15	12:08p	1.25	Across from 631 Powers Rd/CR 161
N42° 3' 39.1	W75° 49' 43.5	6.42	7 Nov 15	12:14p	0.60	896 Powers Rd/CR 161

Night 214°

N42° 2' 35.7	W75° 55' 39.5	3.18	7 Nov 15	11:12a	2.05	1447 Pennsylvania Road/CR 117
N42° 1' 58.2	W75° 56' 13.5	4.57	7 Nov 15	11:21a	1.25	Maxian Road - no address available
N42° 0' 58.6	W75° 57' 7.6	6.79	7 Nov 15	11:40a	0.44	Across from 2946 Hance Road, approx 50' inside the fence of the municipal dump

Night 268°

N42° 3' 56.6	W75° 57' 12.3	3.91	7 Nov 15	10:30a	1.06	954 PowderHouse Road
N42° 3' 55.7	W75° 57' 44.1	4.64	7 Nov 15	10:45a	0.99	1525 Carnegie Drive
N42° 3' 54.6	W75° 58' 28.5	5.66	7 Nov 15	10:57a	0.62	183 Brown Road

ITEM 7 - Direct Measurement of Power

Common point impedance measurement were made using a Delta OIB-1Operating Impedance Bridge. The measurements were made at the phasor cabinet input adjacent to the common point current meter that is used to determine operation power. The impedance measured at this point was adjusted to a value of 50 ± j0 for the directional antenna system.

ITEM 8 - Antenna Monitor and Sampling System

The sample system installed consists of Delta Electronics TCT-3 toroidal current transformers (TCT) installed inside the tuning houses at the base of each tower. All three TCTs have been compared with each other on the bench using the Network Analyzer and found to be in good working order. The TCTs are connected to a Potomac Instruments AM19 antenna monitor by equal lengths of 3/8 inch Cablewave coaxial cable. This cable has a foam dielectric, and solid copper inner and outer conductors. These lines were verified to have equal electrical lengths. All excess cable is in the transmitter building basement. The antenna monitor was tested with a signal generator, a Tee connector and equal lengths of cable. The two signals were fed into the reference and sample inputs and the monitor was found to be in good working order. There is no change to the ground system, the description contained in the current station license remains accurate.