JOHN J. MULLANEY
JOHN H. MULLANEY, P.E. (1994)
ALAN E. GEARING, P.E.
TIMOTHY Z. SAWYER

301 921-0115 Voice
301 590-9757 Fax
mullengr@aol.com E-mail

MULLANEY ENGINEERING, INC.
9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

ORIGINAL

c/o US Bank
1005 Convention Plaza
Federal Communications Commission
Media Bureau Services
Government LockBox 979089
St. Louis, Missouri 63101

21 October 2009

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W. TW-A325
Washington, D.C. 20554

Re: **WGDJ (AM), RENSSELAER, NEW YORK**
Facility Number: 40768
FCC Form 302-AM - Application for Station License

Dear Ms. Dortch:

Transmitted herewith, on behalf of our client, CapitalBroadcasting, Inc., is an original, and two copies of an application for station license to cover construction authorized in BP-20080305ADS for Standard Broadcast Station WGDJ, Rensselaer, New York.

As this application requires a **filing fee**, it is being submitted directly to the US Bank lockbox for fee processing.

Sincerely,

Timothy Z. Sawyer

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 filing out form.)

FOR COMMISSION USE ONLY
FILE NO. BL-20091030AID

SECTION I - APPLICANT FEE INFORMATION

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

CAPITAL BROADCASTING, INC.

MAILING ADDRESS (Line 1) (Maximum 35 characters)

C/O TU Center, 51 South Pearl St.

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
ALBANY	**NY**	**12207**

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
(518) 813-4975	**WGDJ**	

2. A. Is a fee submitted with this application? ☒ Yes ☐ No

B. If No, indicate reason for fee exemptions (see 47 C.F.R. Section 1.1 112).

☐ 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
M M R	0 0 0 1	$ **$615.00**	

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)	FOR FCC USE ONLY
M O R	0 0 0 1	$ **$705.00**	

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
	$ **$1,320.00**	

SECTION II - APPLICANT INFORMATION			
1. NAME OF APPLICANT	**CAPITAL BROADCASTING, INC.**		
MAILING ADDRESS	**C/O TU Center, 51 South Pearl St.**		
CITY **ALBANY**	STATE **NY**	ZIP CODE **12207**	

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
WGDJ	**RENSSELAER**	**BP-20080305ADS**		**7/8/2011**

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.

DIRECTIONAL ANTENNA

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.

SEE TECHNICAL/ENGINEERING STATEMENT

Exhibit No.

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction 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.

NONE - NO CHANGES FROM CONSTRUCTION PERMIT.

Exhibit No,

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.361 5(b)?

☐ Yes ☐ No ☒ Does not apply

If No, explain in an Exhibit.

NOT REQUIRED

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 the application.

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	
PAUL VANDENBURGH		
Title	Date	Telephone Number
PRESIDENT	**10/20/09**	**(518) 813-4975**

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 (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503)

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	
	CAPITAL BROADCASTING, INC.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☒ Station License ☐ Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
WGDJ	**BP-200808305ADS**	**1300**	**UNLIMITED**	**8.0**	**10.0**

2. Station location

State	City or Town
NEW YORK	**RENSSELAER**

3. Transmitter location

State	County	City or Town	Street address (or other identification)
NY	**RENSSELAER**	**RENSSELAER**	**NY ROUTE 9J**

4. Main studio location

State	County	City or Town	Street address (or other identification)
NY	**ALBANY**	**ALBANY**	**TU Center, 51 South Pearl St.**

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

State	County	City or Town	Street address (or other identification)
NY	**ALBANY**	**ALBANY**	**TU Center, 51 South Pearl St.**

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

SEE TECHNICAL/ENGINEERING STATEMENT

☐ Not Applicable

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

Exhibit No. **ENG. STM.**

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
13.0	14.5
Measured antenna or common point resistance (in ohms) at operating frequency Night 50.0 Day 50.0	Measured antenna or common point reactance (in ohms) at operating frequency Night 0.0 Day 0.0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	**147.20**	**0**	**0.583**	**1.000**	**---**	**---**
2	**0**	**-121.5**	**1.000**	**0.338**	**---**	**---**
3	**-137.0**	**---**	**0.493**	**---**	**---**	**---**
4	**107.5**	**---**	**0.481**	**---**	**---**	**---**
5	**-38.1**	**-84.1**	**0.737**	**0.540**	**---**	**---**
6	**-178.7**	**170.2**	**0.382**	**0.257**	**---**	**---**

Manufacturer and type of antenna monitor: **POTOMAC INSTRUMENTS MODEL AM1901 SERIAL #696.**

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, STEEL TOWER.	**57.65**	**59.4**	**59.4**	Exhibit No. **N/A**

Excitation ☒ Series ☐ Shunt **NO CHANGE IN EXISTING TOWERS**

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

North Latitude	**42** °	**35 o 12' 15"** '	**23** "	West Longitude	**73** °	**44** '	**37** "

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. **NONE**

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

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

NONE

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

NEW ANTENNA PARAMETERS/OPERATION

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 app
TIMOTHY Z. SAWYER	
Address (include ZIP Code)	Date
MULLANEY ENGINEERING, INC. **9049 Shady Grove Court** **Gaithersburg, MD 20877-1301**	**October 20, 2009**
	Telephone No. (Include Area Code) **(301) 921-0115**

☐ Technical Director ☐ Registered Professional Engineer

☐ Chief Operator ☒ Technical Consultant

☐ Other (specify)

JOHN J. MULLANEY
JOHN H. MULLANEY, P.E. (1994)
ALAN E. GEARING, P.E.
TIMOTHY Z. SAWYER

301 921-0115 Voice
301 590-9757 Fax
mullengr@aol.com E-mail

MULLANEY ENGINEERING, INC.
9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

ENGINEERING EXHIBIT EE-1:

CAPITAL BROADCASTING, INC.
RADIO STATION WGDJ (AM)
RENSSELAER, NEW YORK

APPLICATION FOR STATION LICENSE

OCTOBER 2009

FCC FACILITY NUMBER
40768

ENGINEERING EXHIBIT
IN SUPPORT OF
AN APPLICATION FOR STATION LICENSE
WGDJ (AM) BROADCAST STATION
CLASS B AM STATION
RENSSELAER, NEW YORK

ENGINEERING EXHIBIT EE-1:

CAPITAL BROADCASTING, INC.
RADIO STATION WGDJ (AM)
RENSSELAER, NEW YORK
APPLICATION FOR STATION LICENSE

OCTOBER 2009

FCC FACILITY NUMBER

40768

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ENGINEERING EXHIBIT EE-1:

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ENGINEERING STATEMENT

APPLICATION FOR STATION LICENSE

WGDJ (AM), RENSSELAER, NEW YORK

FCC FACILITY ID: 40768

1300 KHZ 10.0 KW DAY, 8.0 NIGHT, DA-2

CLASS B

Narrative Statment

This engineering statement and license application is prepared on behalf of Capital Broadcasting, Inc., permittee of Standard Broadcast Station WGDJ, Rensselaer, New York, and covers the construction authorized in FCC construction permit BP-20080305ADS (expiration date July 8, 2011.)

I, Timothy Z. Sawyer, certify that all construction was fully completed prior to the expiration date of the construction permit and that the station is ready for licensing and program test authorization.

The WGDJ construction permit authorized an increase in daytime power from 5-kilowatts to 10-kilowatts using the licensed antenna system, and an increase in nighttime power from 5-kilowatts to 8-kilowatts using a slightly modified (operating parameters only) nighttime antenna system.

No new construction was required, only modification of the station's antenna operating parameters.

All Construction Permit Conditions Have Been Met

All conditions placed upon the construction permit have been fully met and/or agreed to by the applicant as follows:

Condition #1:

Concerning the requested data for a complete nondirectional and directional antenna proof of performance of the nighttime antenna system:

Under the recent changes ot 47 CFR §73.151 which allows for antenna performance verification by computer modeling and sampling system verification the requirements of condition #1 of the permit are fully met concerning the nighttime directional antenna system.

Condition #2:

Concerning the requested data for a partial proof of antenna performance of the daytime directional antenna system:

Under the recent changes ot 47 CFR §73.151 which allows for antenna performance verification by computer modeling and sampling system verification the requirements of condition #2 of the permit are fully met concerning the daytime directional antenna system.

Condition #3:

WGDJ has installed a type accepted transmitter.

Condition #4:

The construction permit expires on July 8, 2011. This application for station license is being filed with the Commission well in advice of the permit expiration date.

Condition #5:

Applicant agrees to be responsible for satisfying all reasonable complaints of blanketing interference with the 1 V/m contour as required by the §73.88 of the Commission's rules.

Request for Program Test Authority

Automatic program test authority was NOT granted because of the use of a directional antenna system. The applicant requests that program test authority be granted as soon as practical. The station/applicant has fully met the terms and conditions of the construction permit.

Changes or Deviations to Report from the Authorized Permit

There are no changes to report concerning changes or deviations from that authorized by the construction permit **with the exception of a typographical error on the permit which specified a daytime radial of 116.8 degrees true as a construction permit required radial. The correct radial azimuth is 166.8 degrees true.** Out of an abundance of caution, the applicant has provided reference measurements for 116.8 degrees true and the correct radial at 166.8 degrees true.

Computer Modeling - Array Analysis - Antenna Performance Verification

Analysis of the antenna systems (daytime and nighttime) were performed using the computer program "Expert Mininec Broadcast Professional" Version 12.7 by EM Scientific, Inc.

The antenna model was tuned to produce the same matrix impedances as those measured at the base of the tower(s) by varing the electrical height of the radiators and adding lumped inductive loads in series with the radiators (utilizing the "lumped load" capabilities of the software program.)

Once the computer model was tuned to match the measured matrix impedances, the array synthesis module of the computer program was used to calculate the proper base drive voltages to generate the fileds necessary to form the required pattern for both daytime and nighttime operation.

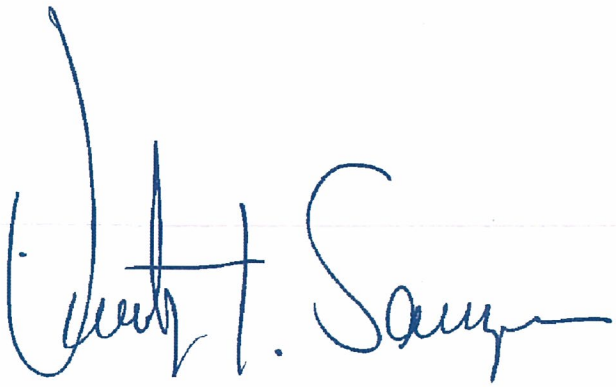
The current distrubution was calculated for each radiator and given that the sampling system utilizes base current sampling devices, the operating parameters were calculated from the resulting currents at each base node.

Summary

As demonstrated in the following tables/figures/exhbits contained within this application, WGDJ has fully met the conditions of its construction permit and is ready for station licensing.

The applicant respectfully requests that full program test authority be granted as soon as possible, while awaiting final processing by the Commission of this license application.

October 20, 2009



Timothy Z. Sawyer, Consulting Engineer
Mullaney Engineering, Inc.
9049 Shady Grove Court
Gaithersburg, MD 20877

Direct E-mail to : tzsawyer@mullengr.com
Telephone: 301-921-0115 ext 3

SECTION I

DESCRIPTION OF RADIATORS

WGDJ (AM) employs six uniform cross-section, guyed steel, series fed towers to form its broadcast antenna systems. All six towers are used by the nighttime directional antenna system, and four of the six towers are used by the daytime directional antenna system. The two unused towers are "floated" during the daytime mode of operation.

All towers/radiators are identical in physical characteristics, 90.0 electrical degrees in length at 1300 kilohertz, triangular, uniform cross-section with a tower face width of 46 centimeters. The radiator length (above base insulator) is 57.6 meters and the overall tower height above ground (including base insulator and pier) is 59.4 meters.

The equivalent radius calculated for the towers for use in the computer model of the antenna system is 0.22 meters using the following formula:

where:

$$R = \frac{1}{2} \times \frac{3F}{\pi}$$

R= Equivalent radius = 0.22 meters
F= Tower face width = 46 cm

The equivalent radius calculated above is employed in the model for all towers without any adjustments.

SECTION II

DESCRIPTION OF SAMPLING SYSTEM

The installed sampling system uses indential Delta TCT-1 precision toroidal current transformers at the base of each tower connected to equal lengths of phase stabilized 3/8-inch foam dielectric, solid outer jacket, coaxial cable connected to a Potomac Instruments AM1901, Serial number: 696, antenna monitor.

All sampling lines are buried and/or exposed to similar enviormental conditions.

The sampling lines were verified to be of equal electrical length by frequency resonating the open circuit transmission line using a signal generator and an R.F. impedance bridge. The system meets the Commission's standards and rules for an "approved" sampling system.

The complete details of the verification and electrical chacateristics of the sampling system are contained in Section VI.

UPS Internet Shipping: View/Print Label

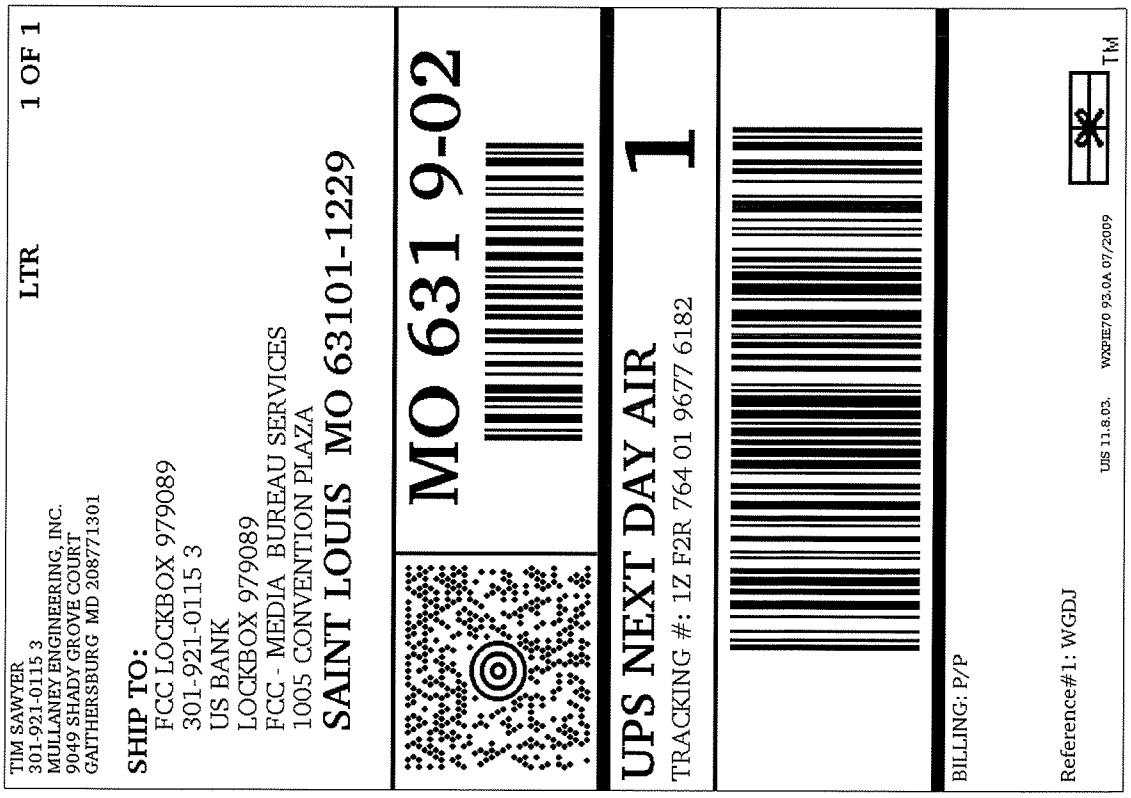
1. **Print the label(s):** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers without a Daily Pickup
   - Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   - Hand the package to any UPS driver in your area.
   - Take your package to any location of The UPS Store®, UPS Drop Box, UPS Customer Center, UPS Alliances (Office Depot® or Staples®) or Authorized Shipping Outlet near you. Items sent via UPS Return Services℠ (including via Ground) are also accepted at Drop Boxes.
   - To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

   Customers with a Daily Pickup
   - Your driver will pickup your shipment(s) as usual.

FOLD HERE



JOHN J. MULLANEY
JOHN H. MULLANEY, P.E. (1994)
ALAN E. GEARING, P.E.
TIMOTHY Z. SAWYER

301 921-0115 Voice
301 590-9757 Fax
mullengr@aol.com E-mail

MULLANEY ENGINEERING, INC.
9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

BY HAND

12 November 2009

Marlene H. Dortch, Secretary, Secretary
Federal Communications Commission
445 12th Street, S.W. TW-A325
Washington, D.C. 20554

Re: **WGDJ (AM) RENSSELAER, NEW YORK**
Facility Number: 40768
FCC Form 302-AM - ENGINEERING AMENDMENT
PENDING APPLICATION BL-20091030AID

Dear Ms. Dortch:

Transmitted herewith, on behalf of our client, Capital Broadcasting, Inc., is an original, and two copies of an engineering amendment to the pending application for Station License and Program Test Authorization, for Standard Broadcast Station WGDJ Rensselaer, New York.

As this amendment to the pending application ***DOES NOT*** requires a filing fee, it is being submitted directly to the Commission for processing.

This amendment provides a correction to the nighttime operating parameters as listed on Form 302-AM, the corrected form page is attached, as well as the non-form sections of the application (engineering statement and exhibits) are provided herein.

Sincerely,

Timothy Z. Sawyer

SECTION III - - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant	
	CAPITAL BROADCASTING, INC.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☒ Station License ☐ Direct Measurement of Power **AMENDED BL-20091030AID**

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
WGDJ	**BP-200808305ADS**	**1300**	**UNLIMITED**	**8.0**	**10.0**

2. Station location

State	City or Town
NEW YORK	**RENSSELAER**

3. Transmitter location

State	County	City or Town	Street address (or other identification)
NY	**RENSSELAER**	**RENSSELAER**	**NY ROUTE 9J**

4. Main studio location

State	County	City or Town	Street address (or other identification)
NY	**ALBANY**	**ALBANY**	**TU Center, 51 South Pearl St.**

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

State	County	City or Town	Street address (or other identification)
NY	**ALBANY**	**ALBANY**	**TU Center, 51 South Pearl St.**

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

SEE TECHNICAL/ENGINEERING STATEMENT

☐ Not Applicable

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

Exhibit No. **ENG. STM.**

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**
13.0	**14.5**
Measured antenna or common point resistance (in ohms) at operating frequency Night **50.0** Day **50.0**	Measured antenna or common point reactance (in ohms) at operating frequency Night **0.0** Day **0.0**

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	**147.20**	**0**	**0.583**	**1.000**	**---**	**---**
2	**0**	**-121.5**	**1.000**	**0.338**	**---**	**---**
3	**-137.0**	**---**	**0.493**	**---**	**---**	**---**
4	**107.5**	**---**	**0.481**	**---**	**---**	**---**
5	**-38.1**	**-84.1**	**0.737**	**0.540**	**---**	**---**
6	**-178.7**	**170.1**	**0.382**	**0.257**	**---**	**---**

Manufacturer and type of antenna monitor: **POTOMAC INSTRUMENTS MODEL AM1901 SERIAL #696.**

~~JOHN J. MULLANEY~~
JOHN H. MULLANEY, P.E. (1994)
ALAN E. GEARING, P.E.
TIMOTHY Z. SAWYER

301 921-0115 Voice
301 590-9757 Fax
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MULLANEY ENGINEERING, INC.
9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

ENGINEERING AMENDMENT TO BL-20091030AID PENDING APPLICATION

ENGINEERING EXHIBIT EE-1:

CAPITAL BROADCASTING, INC.
RADIO STATION WGDJ (AM)
RENSSELAER, NEW YORK

APPLICATION FOR STATION LICENSE

OCTOBER 2009

FCC FACILITY NUMBER
40768

ENGINEERING EXHIBIT
IN SUPPORT OF
AN APPLICATION FOR STATION LICENSE
WGDJ (AM) BROADCAST STATION
CLASS B AM STATION
RENSSELAER, NEW YORK

ENGINEERING EXHIBIT EE-1:

CAPITAL BROADCASTING, INC.
RADIO STATION WGDJ (AM)
RENSSELAER, NEW YORK
APPLICATION FOR STATION LICENSE

OCTOBER 2009

FCC FACILITY NUMBER

40768

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ENGINEERING STATEMENT

APPLICATION FOR STATION LICENSE

WGDJ (AM), RENSSELAER, NEW YORK

FCC FACILITY ID: 40768

1300 KHZ 10.0 KW DAY, 8.0 NIGHT, DA-2

CLASS B

Narrative Statement

This engineering statement and license application is prepared on behalf of Capital Broadcasting, Inc., permittee of Standard Broadcast Station WGDJ, Rensselaer, New York, and covers the construction authorized in FCC construction permit BP-20080305ADS (expiration date July 8, 2011.)

I, Timothy Z. Sawyer, certify that all construction was fully completed prior to the expiration date of the construction permit and that the station is ready for licensing and program test authorization.

The WGDJ construction permit authorized an increase in daytime power from 5-kilowatts to 10-kilowatts using the licensed antenna system, and an increase in nighttime power from 5-kilowatts to 8-kilowatts using a slightly modified (operating parameters only) nighttime antenna system.

No new construction was required, only modification of the station's antenna operating parameters.

All Construction Permit Conditions Have Been Met

All conditions placed upon the construction permit have been fully met and/or agreed to by the applicant as follows:

Condition #1:

Concerning the requested data for a complete nondirectional and directional antenna proof of performance of the nighttime antenna system:

Under the recent changes of 47 CFR §73.151 which allows for antenna performance verification by computer modeling and sampling system verification the requirements of condition #1 of the permit are fully met concerning the nighttime directional antenna system.

Condition #2:

Concerning the requested data for a partial proof of antenna performance of the daytime directional antenna system:

Under the recent changes of 47 CFR §73.151 which allows for antenna performance verification by computer modeling and sampling system verification the requirements of condition #2 of the permit are fully met concerning the daytime directional antenna system.

Condition #3:

WGDJ has installed a type accepted transmitter.

Condition #4:

The construction permit expires on July 8, 2011. This application for station license is being filed with the Commission well in advice of the permit expiration date.

Condition #5:

Applicant agrees to be responsible for satisfying all reasonable complaints of blanketing interference with the 1 V/m contour as required by the §73.88 of the Commission's rules.

Request for Program Test Authority

Automatic program test authority was NOT granted because of the use of a directional antenna system. The applicant requests that program test authority be granted as soon as practical. The station/applicant has fully met the terms and conditions of the construction permit.

Changes or Deviations to Report from the Authorized Permit

There are no changes to report concerning changes or deviations from that authorized by the construction permit **with the exception of a typographical error on the permit which specified a daytime radial of 116.8 degrees true as a construction permit required radial. The correct radial azimuth is 166.8 degrees true.** Out of an abundance of caution, the applicant has provided reference measurements for 116.8 degrees true and the correct radial at 166.8 degrees true.

Computer Modeling - Array Analysis - Antenna Performance Verification

Analysis of the antenna systems (daytime and nighttime) were performed using the computer program "Expert Mininec Broadcast Professional" Version 12.7 by EM Scientific, Inc.

The antenna model was tuned to produce the same matrix impedances as those measured at the base of the tower(s) by varying the electrical height of the radiators and adding lumped inductive loads in series with the radiators (utilizing the "lumped load" capabilities of the software program.)

Once the computer model was tuned to match the measured matrix impedances, the array synthesis module of the computer program was used to calculate the proper base drive voltages to generate the fields necessary to form the required pattern for both daytime and nighttime operation.

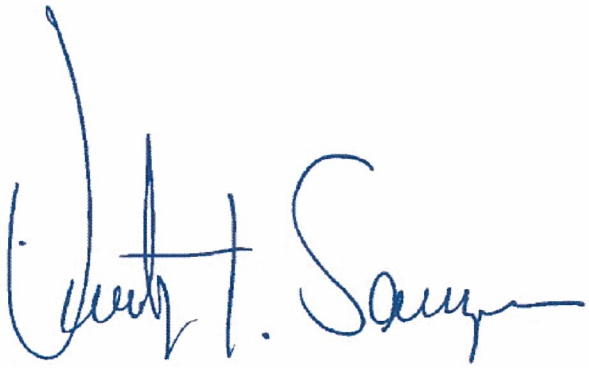
The current distribution was calculated for each radiator and given that the sampling system utilizes base current sampling devices, the operating parameters were calculated from the resulting currents at each base node.

Summary

As demonstrated in the following tables/figures/exhibits contained within this application, WGDJ has fully met the conditions of its construction permit and is ready for station licensing.

The applicant respectfully requests that full program test authority be granted as soon as possible, while awaiting final processing by the Commission of this license application.

October 20, 2009



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SECTION I

DESCRIPTION OF RADIATORS

WGDJ (AM) employs six uniform cross-section, guyed steel, series fed towers to form its broadcast antenna systems. All six towers are used by the nighttime directional antenna system, and four of the six towers are used by the daytime directional antenna system. The two unused towers are "floated" during the daytime mode of operation.

All towers/radiators are identical in physical characteristics, 90.0 electrical degrees in length at 1300 kilohertz, triangular, uniform cross-section with a tower face width of 46 centimeters. The radiator length (above base insulator) is 57.6 meters and the overall tower height above ground (including base insulator and pier) is 59.4 meters.

The equivalent radius calculated for the towers for use in the computer model of the antenna system is 0.22 meters using the following formula:

$$R = \frac{1}{2} \times \frac{3F}{\pi}$$

where:

R= Equivalent radius = 0.22 meters
F= Tower face width = 46 cm

The equivalent radius calculated above is employed in the model for all towers without any adjustments.

SECTION II

DESCRIPTION OF SAMPLING SYSTEM

The installed sampling system uses identical Delta TCT-1 precision toroidal current transformers at the base of each tower connected to equal lengths of phase stabilized 3/8-inch foam dielectric, solid outer jacket, coaxial cable connected to a Potomac Instruments AM1901, Serial number: 696, antenna monitor.

All sampling lines are buried and/or exposed to similar environmental conditions.

The sampling lines were verified to be of equal electrical length by frequency resonating the open circuit transmission line using a signal generator and an R.F. impedance bridge. The system meets the Commission's standards and rules for an "approved" sampling system.

The complete details of the verification and electrical characteristics of the sampling system are contained in Section VI.

SECTION III

MEASURED AND MODELED MATRIC IMPEDANCES

Measurements were made by David Groth of under the immediate supervision of Timothy Z. Sawyer of Mullaney Engineering Inc., using a Delta OIB-3 operating R.F. Impedance bridge in conjunction with a Potomac Instruments RX/SD 31 signal generator and detector. Each tower was driven while all others towers were floated. Measurements were made at the output j-plug of each antenna tuning unit immediately adjacent to the base sampling system transformers.

Measured Impedance Values

TOWER		RESISTANCE (OHMS)	REACTANCE (OHMS)
1 N	1D	60.0	94.9
2 N	2D	59.5	98.8
3 N		65.0	106.6
4 N		61.5	96.2
5 N	3D	59.0	95.6
6 N	4D	61.0	98.2

Modeled Impedance Values

TOWER		RESISTANCE (OHMS)	REACTANCE (OHMS)
1 N	1D	60.3	95.1
2 N	2D	59.1	98.5
3 N		65.1	106.8
4 N		61.8	96.2
5 N	3D	59.2	95.5
6 N	4D	61.0	98.2

Modeled Tower Height and Radius

TOWER	ACTUAL HEIGHT (DEG)	MODELED HEIGHT (DEG)	TOWER HEIGHT (%)	ACTUAL RADIUS (m)	MODELED RADIUS (m)	TOWER RADIUS (%)
1N 1D	90.0	99.5	110.6	0.22	0.22	100.0
2N 2D	90.0	100.3	111.4	0.22	0.22	100.0
3N	90.0	101.5	112.8	0.22	0.22	100.0
4N	90.0	100.2	111.3	0.22	0.22	100.0
5N 3D	90.0	100.3	111.4	0.22	0.22	100.0
6N 4D	90.0	99.8	110.9	0.22	0.22	100.0

Modeled Tower Impedances

Tower 1

WGDJ TOWER 1

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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

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	21.1	0	0	0
2	16	0	-10,000.	0	0	0
3	31	0	-10,000.	0	0	0
4	46	0	-10,000.	0	0	0
5	61	0	-10,000.	0	0	0
6	76	0	-10,000.	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,300.	60.314	95.06	112.58	57.6	4.8245	-3.6537	-2.45

Modeled Tower Impedances

Tower 2

WGDJ TOWER 2

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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

source	node	sector	magnitude	phase	type
1	16	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-10,000.	0	0	0
2	16	0	20.	0	0	0
3	31	0	-10,000.	0	0	0
4	46	0	-10,000.	0	0	0
5	61	0	-10,000.	0	0	0
6	76	0	-10,000.	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 16, sector 1							
1,300.	59.073	98.533	114.88	59.1	5.1195	-3.4374	-2.6215

Modeled Tower Impedances

Tower 3

WGDJ TOWER 3

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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

source	node	sector	magnitude	phase	type
1	31	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-10,000.	0	0	0
2	16	0	-10,000.	0	0	0
3	31	0	21.2	0	0	0
4	46	0	-10,000.	0	0	0
5	61	0	-10,000.	0	0	0
6	76	0	-10,000.	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 31, sector 1							
1,300.	65.061	106.75	125.01	58.6	5.3871	-3.2625	-2.7719

Modeled Tower Impedances

Tower 4

WGDJ TOWER 4

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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

source	node	sector	magnitude	phase	type
1	46	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-10,000.	0	0	0
2	16	0	-10,000.	0	0	0
3	31	0	-10,000.	0	0	0
4	46	0	18.3	0	0	0
5	61	0	-10,000.	0	0	0
6	76	0	-10,000.	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 46, sector 1							
1,300.	61.771	96.152	114.28	57.3	4.8313	-3.6484	-2.454

Modeled Tower Impedances

Tower 5

WGDJ TOWER 5

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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

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

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-10,000.	0	0	0
2	16	0	-10,000.	0	0	0
3	31	0	-10,000.	0	0	0
4	46	0	-10,000.	0	0	0
5	61	0	17.	0	0	0
6	76	0	-10,000.	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 61, sector 1							
1,300.	59.224	95.54	112.41	58.2	4.9074	-3.5901	-2.4988

Modeled Tower Impedances

Tower 6

WGDJ TWR 6

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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

source	node	sector	magnitude	phase	type
1	76	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-10,000.	0	0	0
2	16	0	-10,000.	0	0	0
3	31	0	-10,000.	0	0	0
4	46	0	-10,000.	0	0	0
5	61	0	-10,000.	0	0	0
6	76	0	22.4	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 76, sector 1							
1,300.	60.998	98.162	115.57	58.1	4.999	-3.5226	-2.5521

SECTION IV

DAYTIME ANTENNA SYSTEM

OPERATING PARAMETERS DERIVED FROM MODELED CURRENTS

TOWER NUMBER SITE	CP	BASE CURRENT	BASE CURRENT PHASE	RATIO	PHASE
1	1	15.652	4.1	1.000	0.0
2	2	5.29331	242.6	0.338	-121.5
5	3	8.45116	280.0	0.540	-84.1
6	4	4.01827	174.2	0.257	170.1

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1300 KHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.4	-125.
3	.5	-87.5
4	.3	155.

VOLTAGES AND CURRENTS - peak

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	1,604.86	71.8	15.652	4.1
16	1,079.39	307.6	5.29331	242.6
31	666.118	314.	8.45116	280.
46	1,046.82	210.6	4.01827	174.2

Sum of square of source currents = 360.572

Total power = 10,000. watts

DAYTIME CALCULATED IMPEDANCES

WGDJ DAYTIME
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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	175.	40.	0	.22	15
		175.	40.	100.3		
4	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 4
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	2	6.68667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0185741

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,604.86	71.8	voltage
2	16	1	1,079.39	307.6	voltage
3	31	1	666.118	314.	voltage
4	46	1	1,046.82	210.6	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	21.1	0	0	0
2	16	0	20.	0	0	0
3	31	0	17.	0	0	0
4	46	0	22.4	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,300.	38.801	94.804	102.44	67.7	6.5446	-2.6753	-3.3733
source = 2; node 16, sector 1							
1,300.	85.724	184.52	203.46	65.1	10.143	-1.7183	-4.8576
source = 3; node 31, sector 1							
1,300.	65.327	44.065	78.8	34.	2.2149	-8.4526	-.66919
source = 4; node 46, sector 1							
1,300.	209.07	154.67	260.07	36.5	6.5567	-2.6703	-3.3792

DAYTIME CALCULATED DRIVE VOLTAGES AND CURRENTS

Frequency = 1300 KHz
Input power = 10,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
TWR 1							
GND	0	0	0	15.6699	4.1	15.63	1.11839
2	0	0	6.63333	16.3632	2.7	16.3456	.759741
3	0	0	13.2667	16.6214	1.8	16.6134	.516769
4	0	0	19.9	16.6033	1.1	16.6003	.314332
5	0	0	26.5333	16.3364	.5	16.3358	.142177
6	0	0	33.1667	15.8347	360.	15.8347	-2.99E-03
7	0	0	39.8	15.1092	359.5	15.1087	-.122244
8	0	0	46.4333	14.1713	359.1	14.1697	-.215839
9	0	0	53.0667	13.0326	358.8	13.0295	-.283724
10	0	0	59.7	11.7059	358.4	11.7014	-.325773
11	0	0	66.3333	10.2046	358.1	10.1989	-.341867
12	0	0	72.9667	8.54109	357.8	8.53464	-.331906
13	0	0	79.6	6.72543	357.5	6.71893	-.295706
14	0	0	86.2333	4.75904	357.2	4.75335	-.232655
15	0	0	92.8667	2.6187	356.9	2.61492	-.140654
END	0	0	99.5	0	0	0	0
TWR 2							
GND	84.5723	30.7818	0	5.30627	242.5	-2.44664	-4.70855
17	84.5723	30.7818	6.68667	5.87393	239.5	-2.97695	-5.06367
18	84.5723	30.7818	13.3733	6.17867	237.9	-3.28476	-5.2332
19	84.5723	30.7818	20.06	6.3407	236.7	-3.48511	-5.29702
20	84.5723	30.7818	26.7467	6.37814	235.7	-3.59537	-5.26821
21	84.5723	30.7818	33.4333	6.29883	234.9	-3.62263	-5.15284
22	84.5723	30.7818	40.12	6.10793	234.2	-3.57109	-4.95521
23	84.5723	30.7818	46.8067	5.81023	233.6	-3.4442	-4.67934
24	84.5723	30.7818	53.4933	5.41068	233.1	-3.24531	-4.32936
25	84.5723	30.7818	60.18	4.91468	232.7	-2.978	-3.90968
26	84.5723	30.7818	66.8667	4.3279	232.3	-2.64599	-3.42483
27	84.5723	30.7818	73.5533	3.6559	232.	-2.25294	-2.87921
28	84.5723	30.7818	80.24	2.9031	231.6	-1.80183	-2.27627
29	84.5723	30.7818	86.9267	2.07032	231.3	-1.29333	-1.61664
30	84.5723	30.7818	93.6133	1.14744	231.1	-.721156	-.892497
END	84.5723	30.7818	100.3	0	0	0	0

TWR 3

GND	134.058	-112.488	0	8.45503	280.	1.4635	-8.32741
32	134.058	-112.488	6.68667	8.57065	277.5	1.11466	-8.49785
33	134.058	-112.488	13.3733	8.54992	275.9	.874102	-8.50512
34	134.058	-112.488	20.06	8.42048	274.6	.669305	-8.39383
35	134.058	-112.488	26.7467	8.18789	273.4	.490433	-8.17319
36	134.058	-112.488	33.4333	7.85604	272.4	.334375	-7.84892
37	134.058	-112.488	40.12	7.42905	271.5	.200164	-7.42635
38	134.058	-112.488	46.8067	6.91169	270.7	.0876258	-6.91113
39	134.058	-112.488	53.4933	6.30945	270.	-3.12E-03	-6.30945
40	134.058	-112.488	60.18	5.62843	269.3	-.0718999	-5.62797
41	134.058	-112.488	66.8667	4.87499	268.6	-.118547	-4.87355
42	134.058	-112.488	73.5533	4.05536	268.	-.142966	-4.05284
43	134.058	-112.488	80.24	3.17443	267.4	-.145059	-3.17111
44	134.058	-112.488	86.9267	2.23329	266.8	-.12452	-2.22982
45	134.058	-112.488	93.6133	1.22166	266.2	-.0801661	-1.21903
END	134.058	-112.488	100.3	0	0	0	0

TWR 4

GND	218.619	-81.7384	0	4.02598	174.1	-4.00449	.41543
47	218.619	-81.7384	6.65333	4.39801	166.7	-4.27962	1.01357
48	218.619	-81.7384	13.3067	4.61992	162.5	-4.40588	1.38993
49	218.619	-81.7384	19.96	4.74965	159.4	-4.4456	1.67207
50	218.619	-81.7384	26.6133	4.79264	156.9	-4.40922	1.87834
51	218.619	-81.7384	33.2667	4.75054	154.9	-4.30177	2.01556
52	218.619	-81.7384	39.92	4.62464	153.2	-4.12695	2.087
53	218.619	-81.7384	46.5733	4.41671	151.7	-3.88829	2.09486
54	218.619	-81.7384	53.2267	4.12917	150.4	-3.58945	2.04105
55	218.619	-81.7384	59.88	3.76514	149.2	-3.23435	1.92749
56	218.619	-81.7384	66.5333	3.32812	148.1	-2.82701	1.75624
57	218.619	-81.7384	73.1867	2.82171	147.2	-2.37135	1.5293
58	218.619	-81.7384	79.84	2.24876	146.3	-1.87053	1.24822
59	218.619	-81.7384	86.4933	1.6094	145.4	-1.32543	.912911
60	218.619	-81.7384	93.1467	.895212	144.6	-.730018	.518149
END	218.619	-81.7384	99.8	0	0	0	0

SECTION V

NIGHTTIME ANTENNA SYSTEM

OPERATING PARAMETERS DERIVED FROM MODELED CURRENTS

TOWER NUMBER SITE	CP	BASE CURRENT	BASE CURRENT PHASE	RATIO	PHASE
1	1	8.34871	150.6	0.583	147.2
2	2	14.3113	3.4	1.000	0.0
3	3	7.06236	226.4	0.493	-137.0
4	4	6.88709	110.9	0.481	107.5
5	5	10.5480	325.3	0.737	-38.1
6	6	5.46302	184.7	0.382	-178.7

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1300 KHz

tower	field ratio magnitude	phase (deg)
1	.55	150.8
2	1.	0
3	.565	-138.5
4	.45	110.
5	.75	-39.
6	.455	180.3

VOLTAGES AND CURRENTS - peak

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	734.207	242.2	8.34871	150.6
16	1,689.67	77.1	14.3113	3.4
31	1,372.15	300.2	7.06236	226.4
46	532.721	194.9	6.88709	110.9
61	1,339.54	35.6	10.548	325.3
76	1,269.6	261.8	5.46302	184.7

Sum of square of source currents = 512.93

Total power = 8,000. watts

NIGHTTIME CALCULATED IMPEDANCES

WGDJ NIGHT

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.22	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

source	node	sector	magnitude	phase	type
1	1	1	734.211	242.2	voltage
2	16	1	1,689.67	77.1	voltage
3	31	1	1,372.16	300.2	voltage
4	46	1	532.736	194.9	voltage
5	61	1	1,339.53	35.6	voltage
6	76	1	1,269.6	261.8	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	21.1	0	0	0
2	16	0	20.	0	0	0
3	31	0	21.2	0	0	0
4	46	0	18.3	0	0	0
5	61	0	17.	0	0	0
6	76	0	22.4	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,300.	-2.4903	87.833	87.868	91.6	****	****	****
source = 2; node 16, sector 1							
1,300.	33.094	113.18	117.92	73.7	9.8125	-1.7765	-4.7401
source = 3; node 31, sector 1							
1,300.	53.801	186.25	193.86	73.9	14.833	-1.1729	-6.2585
source = 4; node 46, sector 1							
1,300.	8.0711	76.872	77.294	84.	20.952	-.82977	-7.5966
source = 5; node 61, sector 1							
1,300.	42.598	119.46	126.83	70.4	8.6096	-2.0269	-4.2837
source = 6; node 76, sector 1							
1,300.	51.386	225.99	231.76	77.2	21.833	-.79622	-7.7595

Parallel combination of all sources.

1,300.	3.41953	19.8301	20.1228	80.2	16.931	-1.0272	-6.7647

NIGHTTIME CALCULATED DRIVE VOLTAGES AND CURRENTS

Frequency = 1300 KHz
Input power = 8,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
TWR 1							
GND	0	0	0	5.90968	150.6	-5.1487	2.9009
2	0	0	6.63333	6.14128	150.7	-5.35523	3.00613
3	0	0	13.2667	6.21708	150.7	-5.4241	3.03829
4	0	0	19.9	6.19203	150.8	-5.40422	3.02251
5	0	0	26.5333	6.07608	150.8	-5.30445	2.96337
6	0	0	33.1667	5.87458	150.8	-5.12953	2.86333
7	0	0	39.8	5.5919	150.8	-4.88333	2.72441
8	0	0	46.4333	5.23244	150.9	-4.56977	2.54865
9	0	0	53.0667	4.80092	150.9	-4.19303	2.33823
10	0	0	59.7	4.30241	150.9	-3.7576	2.09551
11	0	0	66.3333	3.74209	150.8	-3.26808	1.82288
12	0	0	72.9667	3.12499	150.8	-2.72893	1.52265
13	0	0	79.6	2.45507	150.8	-2.1437	1.19664
14	0	0	86.2333	1.73326	150.8	-1.51324	.84516
15	0	0	92.8667	.951503	150.8	-.830597	.464183
END	0	0	99.5	0	0	0	0
TWR 2							
GND	84.5723	30.7818	0	10.134	3.4	10.1163	.598054
17	84.5723	30.7818	6.68667	10.7172	2.2	10.7095	.406091
18	84.5723	30.7818	13.3733	10.9686	1.4	10.9651	.275978
19	84.5723	30.7818	20.06	11.02	.9	11.0187	.167625
20	84.5723	30.7818	26.7467	10.8936	.4	10.8934	.0755558
21	84.5723	30.7818	33.4333	10.6002	360.	10.6002	-1.99E-03
22	84.5723	30.7818	40.12	10.1479	359.6	10.1477	-.0656071
23	84.5723	30.7818	46.8067	9.54458	359.3	9.54388	-.115441
24	84.5723	30.7818	53.4933	8.79875	359.	8.79744	-.151495
25	84.5723	30.7818	60.18	7.91931	358.7	7.91741	-.173729
26	84.5723	30.7818	66.8667	6.91581	358.5	6.91341	-.182117
27	84.5723	30.7818	73.5533	5.79713	358.3	5.79444	-.176637
28	84.5723	30.7818	80.24	4.57054	358.	4.56783	-.157228
29	84.5723	30.7818	86.9267	3.23752	357.8	3.23516	-.123594
30	84.5723	30.7818	93.6133	1.78277	357.6	1.78121	-.0746512
END	84.5723	30.7818	100.3	0	0	0	0
TWR 3							
GND	169.145	61.5636	0	5.00588	226.3	-3.45566	-3.62178
32	169.145	61.5636	6.76667	5.54292	224.4	-3.9569	-3.88161
33	169.145	61.5636	13.5333	5.82778	223.4	-4.235	-4.00347
34	169.145	61.5636	20.3	5.9766	222.6	-4.39909	-4.0457
35	169.145	61.5636	27.0667	6.00743	222.	-4.46601	-4.01795
36	169.145	61.5636	33.8333	5.92812	221.5	-4.44285	-3.92476
37	169.145	61.5636	40.6	5.74395	221.	-4.33406	-3.76947
38	169.145	61.5636	47.3667	5.45963	220.6	-4.14345	-3.55518
39	169.145	61.5636	54.1333	5.08007	220.3	-3.87489	-3.28517
40	169.145	61.5636	60.9	4.61055	220.	-3.53246	-2.96291
41	169.145	61.5636	67.6667	4.0566	219.7	-3.12047	-2.59205
42	169.145	61.5636	74.4333	3.42365	219.5	-2.64312	-2.17607
43	169.145	61.5636	81.2	2.71608	219.2	-2.10384	-1.71784
44	169.145	61.5636	87.9667	1.9349	219.	-1.50339	-1.21807
45	169.145	61.5636	94.7333	1.07099	218.8	-.834593	-.671173
END	169.145	61.5636	101.5	0	0	0	0

TWR 4

GND	49.6062	-143.254	0	4.8746	110.9	-1.74114	4.55304
47	49.6062	-143.254	6.68	5.04003	110.6	-1.77528	4.71702
48	49.6062	-143.254	13.36	5.0861	110.4	-1.77553	4.76613
49	49.6062	-143.254	20.04	5.05276	110.3	-1.75092	4.7397
50	49.6062	-143.254	26.72	4.94742	110.1	-1.70337	4.64494
51	49.6062	-143.254	33.4	4.77418	110.	-1.63415	4.4858
52	49.6062	-143.254	40.08	4.53654	109.9	-1.54443	4.26555
53	49.6062	-143.254	46.76	4.23808	109.8	-1.43549	3.98757
54	49.6062	-143.254	53.44	3.88265	109.7	-1.30873	3.65543
55	49.6062	-143.254	60.12	3.47441	109.6	-1.16565	3.27304
56	49.6062	-143.254	66.8	3.01764	109.5	-1.00781	2.84437
57	49.6062	-143.254	73.48	2.51647	109.4	-.836694	2.3733
58	49.6062	-143.254	80.16	1.97421	109.3	-.653529	1.8629
59	49.6062	-143.254	86.84	1.39175	109.2	-.458723	1.31398
60	49.6062	-143.254	93.52	.762788	109.2	-.250329	.720542
END	49.6062	-143.254	100.2	0	0	0	0

TWR 5

GND	134.058	-112.488	0	7.46992	325.3	6.13909	-4.25574
62	134.058	-112.488	6.68667	7.94813	323.7	6.40723	-4.70322
63	134.058	-112.488	13.3733	8.16507	322.8	6.50336	-4.93707
64	134.058	-112.488	20.06	8.22782	322.1	6.49065	-5.05654
65	134.058	-112.488	26.7467	8.15384	321.5	6.3802	-5.07722
66	134.058	-112.488	33.4333	7.95142	321.	6.17782	-5.00596
67	134.058	-112.488	40.12	7.62675	320.5	5.88822	-4.84729
68	134.058	-112.488	46.8067	7.18572	320.1	5.51604	-4.6052
69	134.058	-112.488	53.4933	6.63461	319.8	5.06628	-4.28378
70	134.058	-112.488	60.18	5.98015	319.5	4.5443	-3.88735
71	134.058	-112.488	66.8667	5.22934	319.2	3.95562	-3.42039
72	134.058	-112.488	73.5533	4.38897	318.9	3.30558	-2.88724
73	134.058	-112.488	80.24	3.46442	318.6	2.59846	-2.29134
74	134.058	-112.488	86.9267	2.45678	318.3	1.83532	-1.63321
75	134.058	-112.488	93.6133	1.35434	318.1	1.00776	-.904795
END	134.058	-112.488	100.3	0	0	0	0

TWR 6

GND	218.619	-81.7384	0	3.87437	184.7	-3.86161	-.314216
77	218.619	-81.7384	6.65333	4.38548	182.9	-4.37987	-.221891
78	218.619	-81.7384	13.3067	4.66641	182.	-4.6637	-.159098
79	218.619	-81.7384	19.96	4.82801	181.3	-4.82684	-.10653
80	218.619	-81.7384	26.6133	4.88731	180.7	-4.88692	-.0615607
81	218.619	-81.7384	33.2667	4.8515	180.3	-4.85144	-.0233511
82	218.619	-81.7384	39.92	4.72509	179.9	-4.72508	8.38E-03
83	218.619	-81.7384	46.5733	4.51199	179.6	-4.51186	.0337006
84	218.619	-81.7384	53.2267	4.2161	179.3	-4.21577	.0526292
85	218.619	-81.7384	59.88	3.84158	179.	-3.84103	.0651632
86	218.619	-81.7384	66.5333	3.39278	178.8	-3.39203	.0713137
87	218.619	-81.7384	73.1867	2.87388	178.6	-2.873	.0711015
88	218.619	-81.7384	79.84	2.28816	178.4	-2.28725	.0645237
89	218.619	-81.7384	86.4933	1.63604	178.2	-1.63523	.0514704
90	218.619	-81.7384	93.1467	.90918	178.	-.908636	.0314679
END	218.619	-81.7384	99.8	0	0	0	0

SECTION VI

MEASURED AND CALCULATED SAMPLING LINE CHARACTERISTICS

Measured open circuit resonant frequency at odd multiple of 1/4 wavelength nearest to carrier frequency (270 degrees):

	Resonate Freq.	
Tower 1 Sampling Line:	847.0 kHz	Calculated Electrical Length At Carrier Frequency: 414.404 Degrees
Tower 2 Sampling Line:	847.0 kHz	Calculated Electrical Length At Carrier Frequency: 414.404 Degrees
:		
Tower 3 Sampling Line:	846.5 kHz	Calculated Electrical Length At Carrier Frequency: 414.649 Degrees
:		
Tower 4 Sampling Line:	847.0 kHz	Calculated Electrical Length At Carrier Frequency: 414.404 Degrees
:		
Tower 5 Sampling Line:	847.0 kHz	Calculated Electrical Length At Carrier Frequency: 414.404 Degrees
Tower 6 Sampling Line:	847.0 kHz	Calculated Electrical Length At Carrier Frequency: 414.404 Degrees

Open Circuit sampling lines as measured, are within 0.245 electrical degrees of equal length at carrier frequency (1300 kHz) and within FCC system tolerance of +/- 0.5 degrees.

Measured frequency and impedance 1/8 wavelength (45 degrees) above and below open circuit resonant frequency. Calculated using the formula:

$$Z_o = ((R_1^2 + X_1^2)^{1/2} * (R_2^2 + X_2^2)^{1/2})^{1/2}$$

Tower 1 Sampling Line	988.17 kHz	11.2 +j54.35 ohms	+1/8 wavelength
Tower 1 Sampling Line	705.83 kHz	6.2 -j44.11 ohms	- 1/8 wavelength
Calculated Characteristic Impedance Line 1		**49.72 ohms**	
Tower 2 Sampling Line	988.17 kHz	10.5 +j53.36 ohms	+1/8 wavelength
Tower 2 Sampling Line	705.83 kHz	6.2 -j45.88 ohms	- 1/8 wavelength
Calculated Characteristic Impedance Line 2		**50.18 ohms**	
Tower 3 Sampling Line	987.58 kHz	11.0 +j53.36 ohms	+1/8 wavelength
Tower 3 Sampling Line	705.42 kHz	6.2 -j44.11 ohms	- 1/8 wavelength
Calculated Characteristic Impedance Line 3		**49.26 ohms**	
Tower 4 Sampling Line	988.17 kHz	10.8 +j53.36 ohms	+1/8 wavelength
Tower 4 Sampling Line	705.83 kHz	6.2 -j45.53 ohms	- 1/8 wavelength
Calculated Characteristic Impedance Line 4		**50.02 ohms**	
Tower 5 Sampling Line	988.17 kHz	10.4 +j51.88 ohms	+1/8 wavelength
Tower 5 Sampling Line	705.83 kHz	6.0 -j44.47 ohms	- 1/8 wavelength
Calculated Characteristic Impedance Line 5		**48.73 ohms**	
Tower 6 Sampling Line	988.17 kHz	10.2 +j51.88 ohms	+1/8 wavelength
Tower 6 Sampling Line	705.83 kHz	6.0 -j45.33 ohms	- 1/8 wavelength
Calculated Characteristic Impedance Line 6		**49.17 ohms**	

Characteristic impedance of sampling lines only is +/- 1.29 ohms (within FCC system tolerance of +/- 2.0 ohms)

Measured Impedance at Carrier Frequency (1300 kHz) at the input of the sample line with the sampling device connected:

Tower 1 Sampling Line + Current Sampling Transformer: 51.8 -j 1.0 ohms

Tower 2 Sampling Line + Current Sampling Transformer: 52.5 j 0.0 ohms

Tower 3 Sampling Line + Current Sampling Transformer: 52.0 j 0.0 ohms

Tower 4 Sampling Line + Current Sampling Transformer: 52.0 j 0.0 ohms

Tower 5 Sampling Line + Current Sampling Transformer: 52.0 -j 0.65 ohms

Tower 6 Sampling Line + Current Sampling Transformer: 52.2 -j 0.65 ohms

Characteristic impedance of sampling system with current sampling transformer connected is +/-0.7 ohms (within FCC system tolerance of +/- 2.0 ohms)

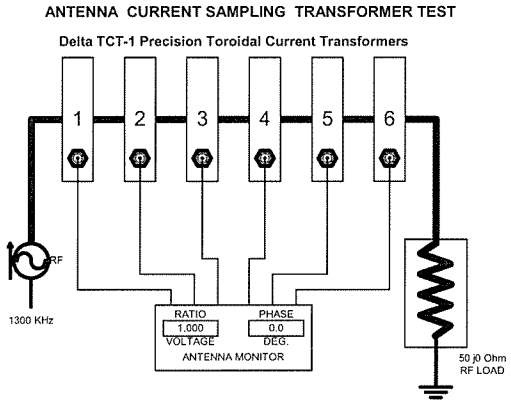
All measurements were made using a Delta OIB-3 operating impedance bridge and a Potomac Instruments RX/SD-31 Signal generator and detector. Prior to all measurements the test equipment was checked and found to be operating correctly and within the respective manufacturers specification.

SECTION VII

SAMPLING SYSTEM TRANSFORMER CALIBRATION

The toroidal current transformers were set up adjacent to each other on a common conductor as shown below. The transmitter was adjusted to supply approximately 1-kilowatt at 1300 kilohertz to the 50 ohm load. The sampling output from the tower #1 transformer was fed into the reference channel of the Potomac Instruments AM 1901 antenna monitor. The sampling output from the other five transformers was alternately fed into channel two of the antenna monitor. The coaxial interconnection cable used from the transformers to the antenna monitor was of equal length and characteristics.

Prior to this test, the antenna monitor was checked using the internal self-check and calibration procedures as specified by the manufacturer and found to be operating correctly.



TOWER	ANTENNA MONITOR MAGNITUDE(Volt)	INDICATED RATIO	INDICATED PHASE
1 TCT-1 SN#1560	**2.00**	**1.000**	**0.0**
2 TCT-1 SN#1557	**1.99**	**0.997**	**0.1**
3 TCT-1 SN#1546	**1.99**	**0.997**	**-0.2**
4 TCT-1 SN#1549	**1.99**	**0.997**	**-0.2**
5 TCT-1 SN#1749	**1.99**	**0.997**	**-0.3**
6 TCT-1 SN#1527	**2.00**	**1.000**	**-0.2**

The manufacturer's specifications for the transformers is 2% magnitude accuracy and +/- 2.0 absolute degrees. **The units as measured, are well within the manufacturer's specifications, and are operating correctly.**

SECTION VIII

REFERENCE FIELD STRENGTH MEASUREMENTS - WGDJ

Reference field strength measurements were made using a Potomac Instruments field strength meter FIM-41 of known calibration at three or more points (locations) along each of the azimuths as specified in the station's construction permit, and, additionally, on a major lobe radial for each directional pattern.

The measured field strengths and descriptions and GPS coordinates for the reference MEASUREMENTS points (locations) are tabulated on the following pages.

All measurements were made during normal daylight hours, within the period of 2-hours after sunrise and 2-hours before sunset. Measurements were made by Timothy Z. Sawyer of Mullaney Engineering, Inc., Gaithersburg, Maryland.

One of the radials specified in the construction permit for the daytime antenna system contain a typographical error on the permit.

The daytime radial listed as 116.8 degrees true on the construction permit should be 166.8 degrees true. Out of an abundance of caution, both radials have been included in the reference field strength measurement data.

Reference Field Strength Measurements

WGDJ - DAY

Radial: 108.3 degrees True (Construction Permit Radial)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	4.51	73.5	42-34-37.26 N.	73-41-27.48 W.	AT #1532 SUNSET ROAD MAILBOX, SOUTH SIDE OF ROAD
2	7.05	20.5	42-34-11.36 N.	73-39-42.03 W.	RENO ROAD AT CURVE, WEST SIDE OF ROAD
3	9.63	3.85	42-33-45.42 N.	73-37-54.35 W.	PARKING LOT AREA, #3033 SR150 EASTSIDE OF ROAD
4	12.82	3.75	42-33-13.00 N.	73-35-41.68 W.	HOAGS CORNER ROAD NORTH SIDE OF ROAD AT COMMUNITY WATER TREATMENT BUILDING DRIVEWAY.

Radial: 116.8 degrees True (Construction Permit Radial **ERROR SHOULD BE 166.8 DEG.T SEE NEXT RADIAL**)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	5.59	31.8	42-34-01.06 N.	73-40-56.81 W.	SHOPPING CENTER LOT, NORTHEAST CORNER OF LOT BEHIND ECKARDS DRUG STORE.
2	7.85	12.7	42-33-30.37 N.	73-39-26.84 W.	DRIVEWAY TO BROOKE POINTE APARTMENTS, NORTH SIDE OF E. SCHODACK ROAD
3	9.84	9.20	42-32-58.80 N.	73-38-10.81 W.	AT #230 POYNEER ROAD - WEST SIDE OF ROAD.
4	12.18	2.43	42-32-25.59 N.	73-36-38.39 W.	AT #122 BEST ROAD - SOUTH SIDE OF ROAD

Reference Field Strength Measurements

WGDJ - DAY

Radial: 166.8 degrees True (Construction Permit Radial - **ADDED**)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	4.78	14.0	42-32-52.80 N.	73-43-47.10 W.	NORTH SIDE OF ROADWAY - STONY POINT ROAD, 200 FT WEST OF JENSIS ROAD
2	5.85	10.1	42-32-19.00 N.	73-43-36.20 W.	CENTER OF ROADWAY - BROOKVIEW ROAD, 0.38 MILES WEST TO WESTERN ROAD.
3	8.53	5.00	42-30-54.38 N.	73-43-09.47 W.	NORTH SIDE OF ROADWAY - VAN HOESEN ROAD, 0.31 MILE EAST OF LOCUS HILL WAY.
4	9.90	3.40	42-30-11.43 N.	73-42-55.94 W.	CLOVE ROAD, 0.47 MILE WEST OF INTERSECTION WITH SOUTH SCHODACK ROAD - CENTER OF ROADWAY

Radial: 246.8 degrees True (Construction Permit Radial)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	5.42	45.9	42-34-15.57 N.	73-48-14.82 W.	AT #909 US 9W HIGHWAY, EASTSIDE OF ROAD
2	10.85	16.7	42-33-04.74 N.	73-51-53.00 W.	OLD QUARRY ROAD, CENTER OF ROAD BETWEEN RED AND GREY BARNS
3	14.34	3.96	42-32-20.40 N.	73-54-13-46 W.	ROWE ROAD AT HIDDEN DRIVEWAY SIGN, CENTER OF ROAD
4	18.55	2.40	42-31-26.40 N.	73-57-03.00 W.	AT #2 SR32, WEST SIDE OF ROAD

Reference Field Strength Measurements

WGDJ - DAY

Radial: 279.4 degrees True (Construction Permit Radial)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	4.38	19.1	42-35-47.80 N.	73-47.44.73 W.	IN CEMETERY, NEXT TO "DE LA MATER" HEADSTONE.
2	6.67	7.35	42-35-58.37 N.	73-49-24.51 W.	AT #711 FEURA BUSH ROAD, CENTER OF ROADWAY
3	11.09	3.10	42-36-21.79 N.	73-52-35.45 W.	DELAWARE AVENUE, 1ST DRIVEWAY EASTSIDE , NORTH OF INTERSECTION.
4	19.35	0.92	42-37-04.64 N.	73-58-32.86 W.	2865 NEW SCOTLAND ROAD, WESTSIDE OF ROAD, 75 FEET SOUTH OF NEW SCOTLAND HWY. DEPT. BUILDING

Radial: 340.2 degrees True (Main Lobe)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	5.84	123.0	42-38-21.28 N.	73-46-01.67 W.	AT #136 SECOND AVENUE, NORTH SIDE OF ROADWAY
2	7.46	120.2	42-39-10.81 N.	73-46-27.23 W.	AT #22 NEW SCOTLAND AVENUE, CENTER OF ROADWAY
3	9.91	28.3	42-40-25.38 N.	73-47-03.92 W.	AT #215 NORTH ALLEN STREET, CENTER OF ROADWAY
4	12.83	24.0	42-41-54.13 N.	73-47-47.95 W.	AT #13 BRICKLEY DRIVE, CENTER OF ROADWAY

Reference Field Strength Measurements

WGDJ - NIGHT

Radial: 72.0 degrees True (Construction Permit Radial)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	5.79	3.30	42-36-23.42 N.	73-40-34.51 W.	#20 NEW ROAD, 30 FEET NORTH OF MAIL BOX, EASTSIDE OF ROAD.
2	9.22	0.95	42-36-54.72 N.	73-38-09.86 W.	#833 BEST ROAD MAIL BOX, EAST OF INTERSECTION SOUTH SIDE OF ROAD.
3	10.38	1.10	42-37-06.47 N.	73-37-22.00 W.	PARKER ROAD 75 FEET NORTH OF INTERSECTION WITH BARRES ROAD, EASTSIDE OF ROADWAY
4	12.06	0.48	42-37-25.21 N.	73-36-12.57 W.	AT #4019 SR150 MAILBOX EASTSIDE OF ROADWAY

Radial: 95.4 degrees True

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	4.96	20.0	42-35-09.00 N.	73-40-58.58 W.	WATERS ROAD, CENTER OF ROAD, NORTH OF CURVE, BY 1ST TELEPHONE POLE EASTSIDE.
2	6.84	5.00	42-35-02.15 N.	73-39-36.49 W.	AT #366 OLD MILLER ROAD, CENTER OF ROADWAY
3	9.76	2.00	42-34-51.40 N.	73-37-29.50 W.	AT #3327 SR150 OLD BARN WESTSIDE OF ROADWAY
4	11.74	1.70	42-34-47.00 N.	73-36-02.81 W.	NORTH SCHODACK ROAD AT DRIVEWAY, WESTSIDE OF ROAD.

Reference Field Strength Measurements

WGDJ - NIGHT

Radial: 117.5 degrees True (Construction Permit Radial)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	4.13	10.8	42-34-21.60 N.	73-41-54.28 W.	AT #1438 SUNSET ROAD, CENTER OF ROADWAY
2	7.86	2.35	42-33-29.40 N.	73-39-26.76 W.	BRIDGE OVER MOORDENER KILL, WESTSIDE OF ROAD, NORTH END OF BRIDGE
3	9.31	2.40	42-33-03.88 N.	73-38-33.14 W.	AT #335 BEAVER ROAD, CENTER OF ROADWAY
4	11.86	0.70	42-32-26.90 N.	73-36-53.43 W.	AT CURVE IN ROAD SIGN, BEST ROAD, CENTER OF ROADWAY.

Radial: 156.2 degrees True

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	5.49	21.5	42-32-39.96 N.	73-42.59.07 W.	AT #1966 BROOKVIEW ROAD AT MAILBOX
2	9.17	8.50	43-30-50.80 N.	73-41-54.77 W.	AT #1425 VAN HOESER ROAD, WESTSIDE OF ROADWAY
3	12.52	4.30	42-29-12.03 N.	73-40-53.85 W.	DUCK POND ROAD, 300 FEET WEST OF RT 9, NORTH SIDE OF ROADWAY
4	14.08	2.90	42-28-27.12 N.	73-40-21.84 W.	CR32 AT CURVE IN ROAD SIGN, NORTH SIDE OF ROADWAY

Reference Field Strength Measurements

WGDJ - NIGHT

Radial: 211.0 degrees True (Construction Permit Radial)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	3.64	2.70	42-33-42.12 N.	73-45-58.00 W.	STATE ROAD SR144, EAST SIDE OF ROADWAY, CLUMP OF TREES TO THE WEST.
2	4.67	3.50	42-33-14.00 N.	73-46-22.07 W.	AT #46 CLAPPER ROAD, NORTH SIDE OF ROADWAY
3	7.65	1.00	42-31-49.81 N.	73-47-26.57 W.	MAPLE AVENUE AT PIPELINE MARKER NORTH SIDE OF ROADWAY
4	12.68	0.78	42-29-31.18 N.	73-49-22.26 W.	COUNTY ROAD 101, 150 FEET NORTH OF CONVEYOR BELT SYSTEM, WESTSIDE OF ROADWAY

Radial: 350.4 degrees True (Main Lobe)

Point	Distance (km)	Field (mV/m)	Geographical Coordinates (NAD 83)		Description
1	5.29	285.0	42-38-12.60 N.	73-45-13.70 W.	AT #10 BROADWAY, NEXT TO FIRE PLUG, EAST SIDE OF ROADWAY
2	6.40	250.0	42-38-48.10 N.	73-45-22.41 W.	GRANT STREET, AT THIRD LIGHT POLE SOUTH OF MALL TOWERS WEST SIDE OF ROADWAY
3	8.12	40.0	42-39-43.09 N.	73-45-34.51 W.	AT #199 SECOND STREET, CENTER OF ROADWAY
4	10.20	31.5	42-40-49.20 N.	73-45-50.40 W.	CORPORATE WOODS DRIVE AND CORPORATE WOODS BLVD. SOUTHWEST CORNER OF INTERSECTION

SECTION IX

DIRECT MEASUREMENT OF POWER

Following adjustment of the directional antenna arrays, the common point impedance (day and night) was measured by this office and set to 50 ohms j0 utilizing an in-line Delta Electronics RF operating impedance bridge. Prior to the measurement and adjustment the operating impedance bridge was checked and found to be operating correctly and within the manufacturers specifications.

SECTION X

ENVIRONMENTAL STATEMENT

All towers are surrounded by a gated and locked wooden fence of approximately 5 feet (1.5 meters) in height, the nearest point of approach to the radiator is at least 2 meters distance.

The maximum power to any one tower in the directional array is less than 5-kilowatts. The distance to the fence meets the suggest minimum distance as outlined in OET Bulletin number 65 for towers 90 degrees in electrical height.

APPENDIX A

CERTIFIED POST CONSTRUCTION ARRAY GEOMETRY SURVEY

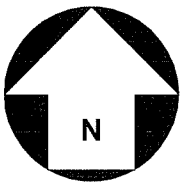
Attached is a certified survey of array geometry as built, the table below is a summary of the survey and the design parameters. Also included in the following pages are plots of each tower in relationship to reference tower #1, showing location of as-built tower and FCC tolerance limits. All towers meet the FCC as-built limits on array geometry.

	DESIGN		AS BUILT	
TOWER	BEARING	DISTANCE	BEARING	DISTANCE
1 N REF 1D	000.00 DEG T.	000.00 FT	000.00 DEG T.	000.00 FT
2 N 2D	340.00 DEG T	189.15 FT	340.00 DEG T.	188.00 FT
3 N ----	340.00 DEG T.	378.30 FT	339.81 DEG T.	377.50 FT
4 N ----	070.90 DEG T.	318.61 FT	071.16 DEG T.	318.80 FT
5 N 3 D	040.00 DEG T.	367.79 FT	040.06 DEG T.	368.10 FT
6 N 4 D	020.50 DEG T.	490.53 FT	020.56 DEG T.	490.10 FT

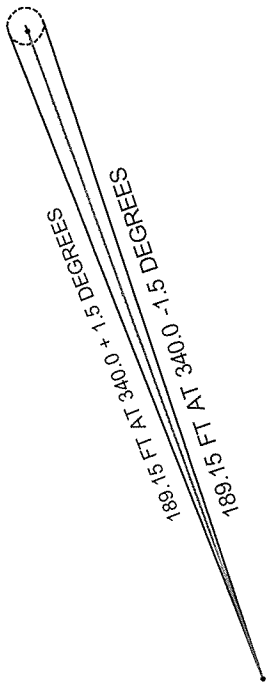
WGDJ (AM) TOWER 2 NIGHT/ TOWER 2 DAY

Design 189.15 ft @ 340.0 degrees T.
As built 188.00 ft @ 340.0 degrees T.

FROM ATTACHED LAND SURVEY



SCALE: 1" = 50' 0"

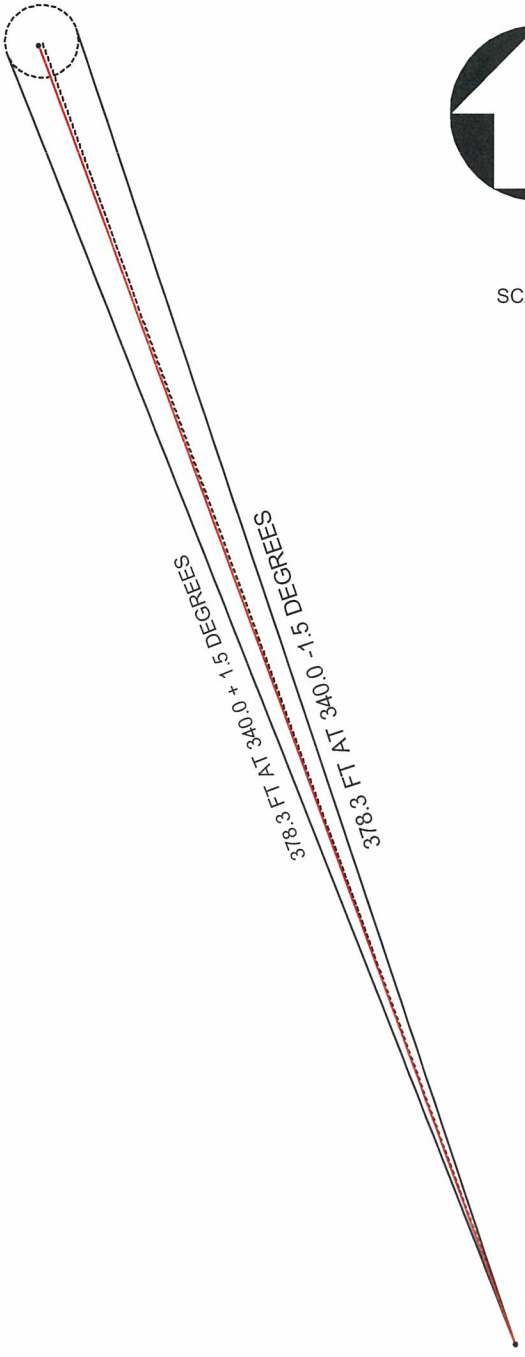


REFERENCE TOWER 1 NIGHT/ TOWER 1 DAY

WGDJ (AM) TOWER 3 NIGHT

Design 378.30 ft @ 340.0 degrees T.
As built 377.50 ft @ 339.8 degrees T.

FROM ATTACHED LAND SURVEY



SCALE: 1" = 50' 0"

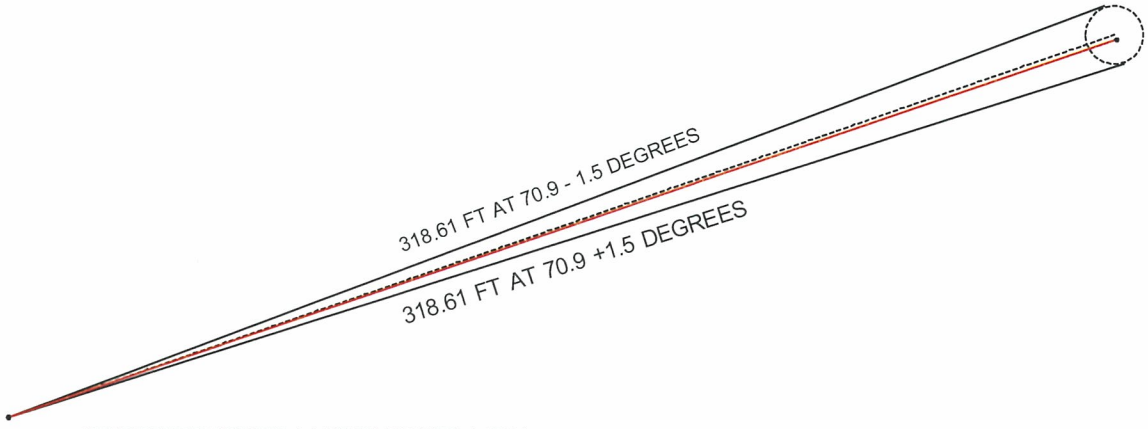
REFERENCE TOWER 1 NIGHT/ TOWER 1 DAY

SCALE: 1" = 50' 0"

WGDJ (AM) TOWER 4 NIGHT

Design 318.61 ft @ 70.9 degrees T.
As built 318.80 ft @ 71.16 degrees T.

FROM ATTACHED LAND SURVEY



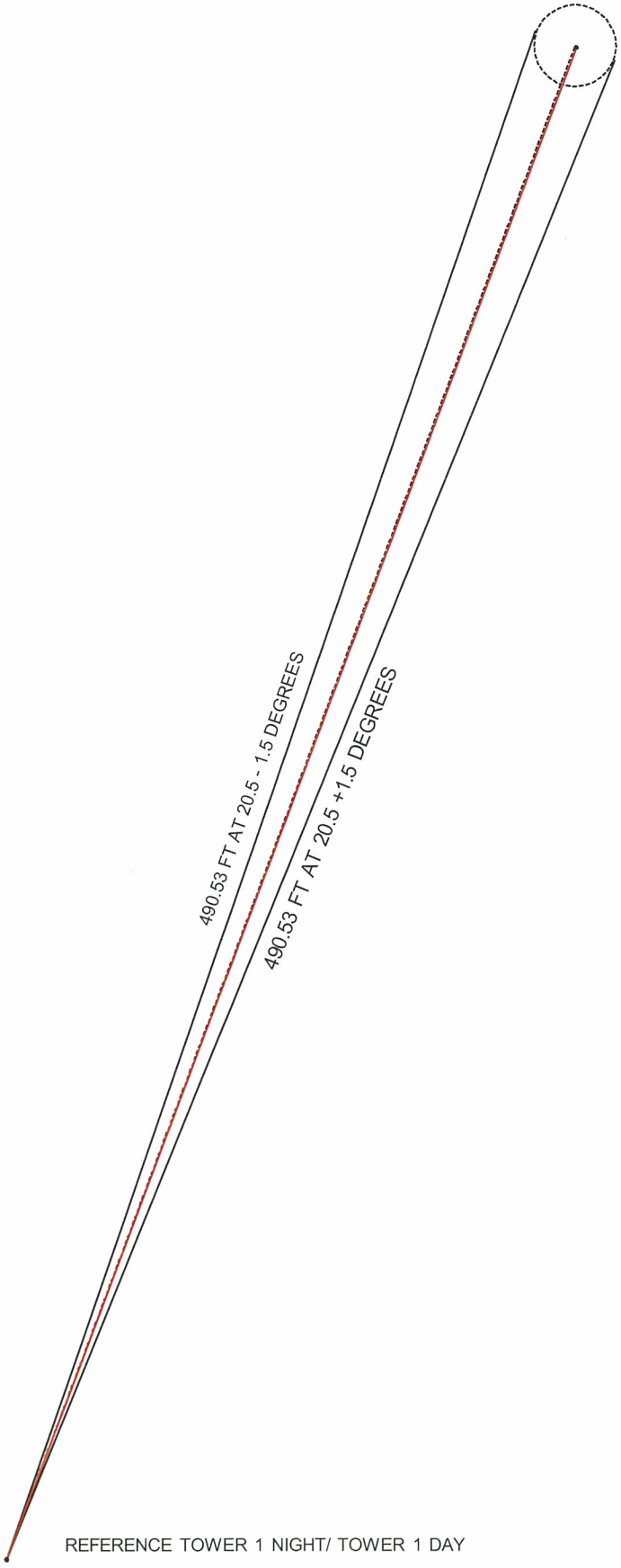
REFERENCE TOWER 1 NIGHT/ TOWER 1 DAY

WGDJ (AM) TOWER 5 NIGHT/ TOWER 3 DAY

Design 367.79 ft @ 40.0 degrees T.
As built 368.10 ft @ 40.06 degrees T.

FROM ATTACHED LAND SURVEY

SCALE: 1" = 50' 0"

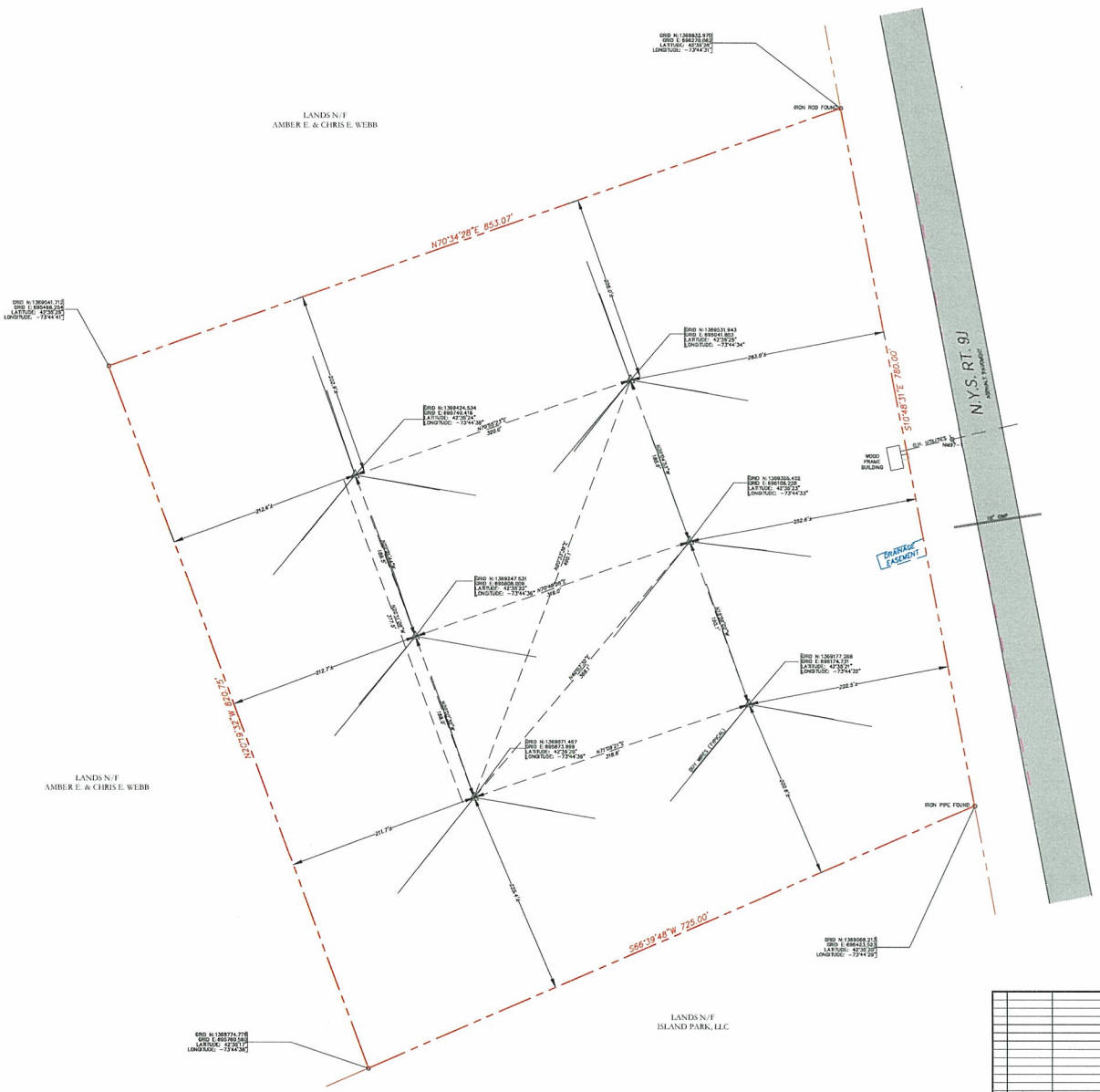


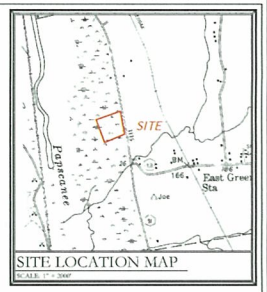
WGDJ (AM) TOWER 6 NIGHT/ TOWER 4 DAY

Design 490.53 ft @ 20.5 degrees T.
As built 490.10 ft @ 20.56 degrees T.

FROM ATTACHED LAND SURVEY

SCALE: 1" = 50' 0"





SITE LOCATION MAP
SCALE: 1" = 2000'

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM AN ACTUAL FIELD SURVEY IN ACCORDANCE WITH THE EXISTING CODE OF PRACTICE ADOPTED BY THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.
2. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYORS SEAL IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
3. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MAP MARKED WITH AN ORIGINAL OF THE LAND SURVEYORS SEAL AND SIGNATURE IN RED SHALL BE CONSIDERED TO BE TRUE AND VALID COPIES.
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6. TAX MAP I.D. NO. 165.00-1-22.12
7. SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT AND IS SUBJECT TO ANY STATEMENTS OF FACTS THAT SUCH AN ABSTRACT OF TITLE OR TITLE REPORT MAY REVEAL.
8. SUBJECT TO ANY RIGHTS OF WAYS OR EASEMENTS OF RECORD.

MAP REFERENCE:

MAP ENTITLED "ALTA/ ACSM LAND TITLE SURVEY FOR REGENT COMMUNICATIONS, INC.", DATED JUNE 6, 2000 AND PREPARED BY GURLEY ENGINEERING SURVEYING AND MAPPING GROUP, P.C.

NO.	DATE	REVISIONS	BY
1	11/11/09	ADDED NEW TOWER DIMENSIONS	S.P.W.
NO.	DATE	RECORD OF REVISIONS	BY

STEPHEN P. WALRATH, L.S.
LAND SURVEYING & LAND PLANNING
P.O. BOX 311, 122 MAIN STREET
CHAMPLAIN, NEW YORK 12919
TEL: (518) 298-8329

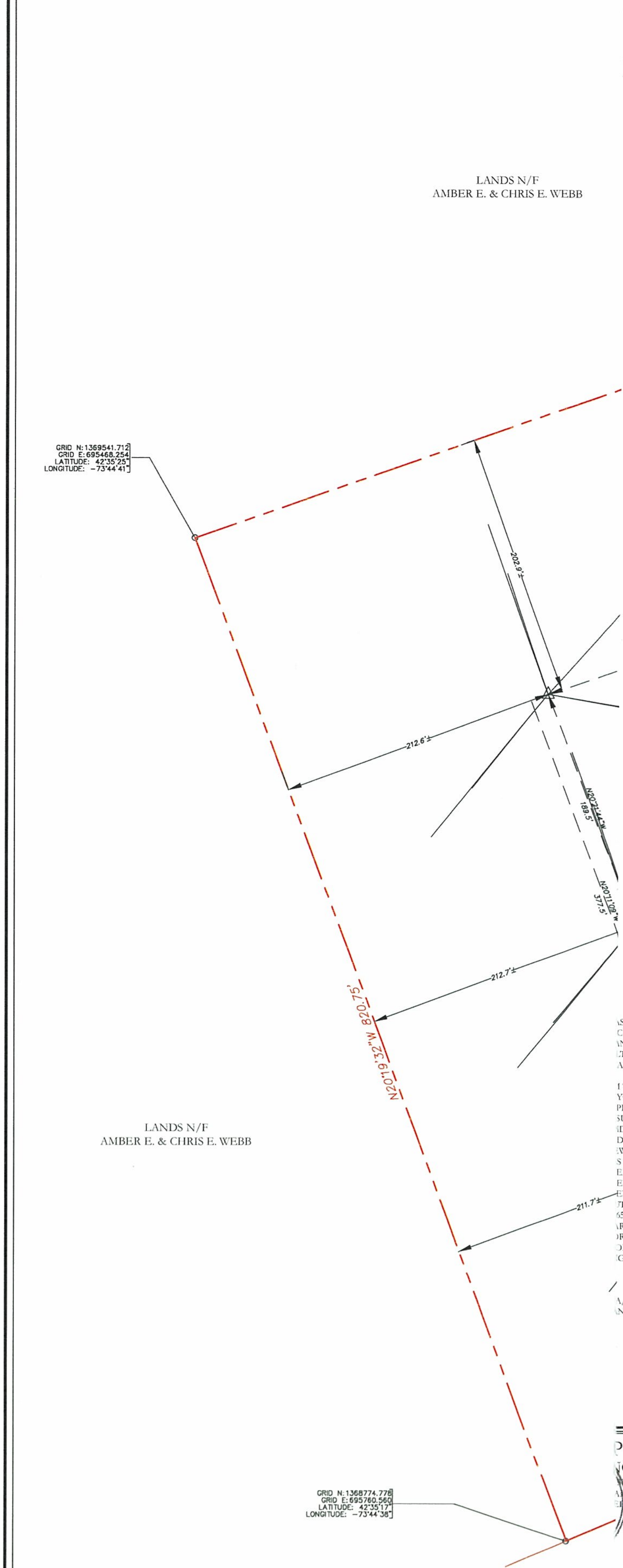
N.Y.S. LIC. NO. 49678

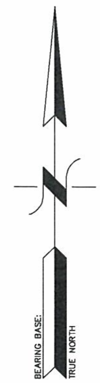
DATE: MARCH 24, 2009

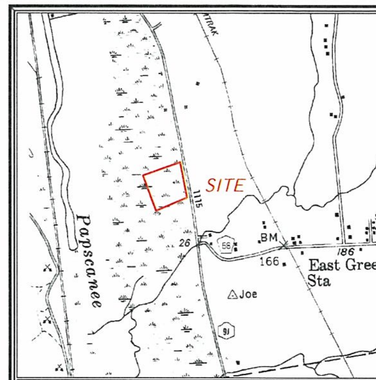
MAP OF SURVEY
SHOWING TOWER LOCATIONS ON
LANDS OF CBI, LLC
TOWN OF EAST GREENBUSH
COUNTY OF RENSSELAER STATE OF NEW YORK

PROJECT NO.	FILE: JOBS 2009\09172\WORK\TRUE	SCALE: 1" = 60'
09172		

DWG. NO. 09172-1 SHEET 1 OF 1







SITE LOCATION MAP

SCALE: 1" = 2000'

AS PREPARED FROM AN ACTUAL FIELD SURVEY IN ACCORDANCE
CODE OF PRACTICE ADOPTED BY THE NEW YORK STATE ASSOCIATION
AND SURVEYORS.
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AL IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE

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SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
IDICATED OR IMPLIED HEREON SIGNIFY THAT THIS SURVEY WAS
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EW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.
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ENDING INSTITUTION. CERTIFICATIONS ARE NOT TRANSFERRABLE TO
TIONS OR SUBSEQUENT OWNERS.
65.00-1-22.12.
ARED WITHOUT THE BENEFIT OF AN UP TO DATE ABSTRACT OF
RT AND IS SUBJECT TO ANY STATEMENTS OF FACTS THAT SUCH AN
OR TITLE REPORT MAY REVEAL.
GHTS-OF-WAYS OR EASEMENTS OF RECORD.

A/ACSM LAND TITLE SURVEY FOR REGENT COMMUNICATIONS, INC.",
ND PREPARED BY GURLEY ENGINEERING SURVEYING AND MAPPING

P. WALRATH,L.S.
G & LAND PLANNING
31 122 MAIN STREET
AMONT, NY 12009
EL 518-986-0125

DATE: MARCH 24, 2009

MAP OF SURVEY
SHOWING TOWER LOCATIONS ON

LANDS OF CBI, LLC

TOWN OF EAST GREENBUSH

COUNTY OF RENSSELAER — STATE OF NEW YORK

PROJECT NO: 09172	FILE: JOBS 2009\ 09172\WORK-TRUE	SCALE: 1" = 60'

DWG. NO. 09172-1 — SHEET 1 OF 1

JOHN J. MULLANEY
JOHN H. MULLANEY, P.E. (1994)
ALAN E. GEARING, P.E.
TIMOTHY Z. SAWYER

301 921-0115 Voice
301 590-9757 Fax
mullengr@aol.com E-mail

MULLANEY ENGINEERING, INC.
9049 SHADY GROVE COURT
GAITHERSBURG, MD 20877

BY HAND

16 November 2009

COPY

Marlene H. Dortch, Secretary, Secretary
Federal Communications Commission
445 12th Street, S.W. TW-A325
Washington, D.C. 20554

FILED/ACCEPTED

NOV 17 2009

Federal Communications Commission
Office of the Secretary

Re: **WGDJ (AM) RENSSELAER, NEW YORK**
Facility Number: 40768
FCC Form 302-AM - ENGINEERING AMENDMENT
PENDING APPLICATION BMML-20091030AID

Dear Ms. Dortch:

Transmitted herewith, on behalf of our client, Capital Broadcasting, Inc., is an original, and two copies of an engineering amendment to the pending application for Station License and Program Test Authorization, for Standard Broadcast Station WGDJ Rensselaer, New York.

As this amendment to the pending application ***DOES NOT*** requires a filing fee, it is being submitted directly to the Commission for processing.

This amendment provides a correction to the Section IV of the engineering data (daytime antenna system calculations), as well as a minor change (0.1 degree) to the daytime operating parameters as listed on Form 302-AM, the corrected form page is attached, as well as the non-form section of the application (Engineering Section IV) and are provided herein.

Sincerely,

Timothy Z. Sawyer

SECTION III - - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant	
	CAPITAL BROADCASTING, INC.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☒ Station License ☐ Direct Measurement of Power **AMENDED BMML-20091030AID**

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
WGDJ	**BP-200808305ADS**	**1300**	**UNLIMITED**	**8.0**	**10.0**

2. Station location

State	City or Town
NEW YORK	**RENSSELAER**

3. Transmitter location

State	County	City or Town	Street address (or other identification)
NY	**RENSSELAER**	**RENSSELAER**	**NY ROUTE 9J**

4. Main studio location

State	County	City or Town	Street address (or other identification)
NY	**ALBANY**	**ALBANY**	**TU Center, 51 South Pearl St.**

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

State	County	City or Town	Street address (or other identification)
NY	**ALBANY**	**ALBANY**	**TU Center, 51 South Pearl St.**

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

SEE TECHNICAL/ENGINEERING STATEMENT

☐ Not Applicable

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

Exhibit No. **ENG. STM.**

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
13.0	**14.5**
Measured antenna or common point resistance (in ohms) at operating frequency Night **50.0** Day **50.0**	Measured antenna or common point reactance (in ohms) at operating frequency Night **0.0** Day **0.0**

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	**147.20**	**0**	**0.583**	**1.000**	**---**	**---**
2	**0**	**-121.5**	**1.000**	**0.338**	**---**	**---**
3	**-137.0**	**---**	**0.493**	**---**	**---**	**---**
4	**107.5**	**---**	**0.481**	**---**	**---**	**---**
5	**-38.1**	**-84.1**	**0.737**	**0.540**	**---**	**---**
6	**-178.7**	**170.2**	**0.382**	**0.257**	**---**	**---**

Manufacturer and type of antenna monitor: **POTOMAC INSTRUMENTS MODEL AM1901 SERIAL #696.**

SECTION IV (amended 11/16/09)

DAYTIME ANTENNA SYSTEM

OPERATING PARAMETERS DERIVED FROM MODELED CURRENTS

TOWER NUMBER SITE	CP	BASE CURRENT	BASE CURRENT PHASE	RATIO	PHASE
1	1	15.6465	4.1	1.000	0.0
2	2	5.2889	242.6	0.338	-121.5
5	3	8.44713	280.0	0.540	-84.1
6	4	4.01373	174.3	0.257	170.2

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1300 KHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.4	-125.
3	0	0
4	0	0
5	.5	-87.5
6	.3	155.

VOLTAGES AND CURRENTS - peak

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	1,602.78	71.8	15.6465	4.1
16	1,079.95	307.5	5.2889	242.6
31	12,088.	206.8	1.15511	296.8
46	10,315.2	254.7	.98486	344.7
61	666.847	313.9	8.44713	280.
76	1,047.65	210.6	4.01373	174.3

Sum of square of source currents = 362.555
Total power = 10,000. watts

Note: Towers 3 (NODE 31) and 4 (NODE 46) are unused during daytime operation and are disconnected (floated).

DAYTIME CALCULATED IMPEDANCES

WGDJ DAYTIME
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	15
		0	0	99.5		
2	none	90.	340.	0	.22	15
		90.	340.	100.3		
3	none	180.	340.	0	.22	15
		180.	340.	101.5		
4	none	151.6	70.9	0	.22	15
		151.6	70.9	100.2		
5	none	175.	40.	0	.22	15
		175.	40.	100.3		
6	none	233.4	20.5	0	.22	15
		233.4	20.5	99.8		

Number of wires = 6
current nodes = 90

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	6.63333	3	6.76667
radius	1	.22	1	.22

ELECTRICAL DESCRIPTION
Frequencies (KHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1,300.	0	1	.0184259	.0187963

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,602.78	71.8	voltage
2	16	1	1,079.95	307.5	voltage
3	31	1	12,088.	206.8	voltage
4	46	1	10,315.2	254.7	voltage
5	61	1	666.847	313.9	voltage
6	76	1	1,047.65	210.6	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	21.1	0	0	0
2	16	0	20.	0	0	0
3	31	0	-10,000.	0	0	0
4	46	0	-10,000.	0	0	0
5	61	0	17.	0	0	0
6	76	0	22.4	0	0	0

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,300.	38.573	94.312	101.89	67.8	6.5264	-2.6829	-3.3644
source = 2; node 16, sector 1							
1,300.	91.009	186.14	207.2	63.9	9.8828	-1.7638	-4.7654
source = 3; node 31, sector 1							
1,300.	18.804	-10,456.	10,456.	270.1	1.2E+05	-1.5E-04	-44.643
source = 4; node 46, sector 1							
1,300.	8.3481	-10,466.	10,466.	270.	2.6E+05	-6.6E-05	-48.165
source = 5; node 61, sector 1							
1,300.	66.3	43.484	79.288	33.3	2.195	-8.5422	-.65445
source = 6; node 76, sector 1							
1,300.	214.14	157.97	266.1	36.4	6.6975	-2.6133	-3.4473

DAYTIME CALCULATED DRIVE VOLTAGES AND CURRENTS

Frequency = 1300 KHz
Input power = 10,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
TWR 1							
GND	0	0	0	15.7068	4.1	15.6669	1.11922
2	0	0	6.63333	16.3964	2.7	16.3787	.761681
3	0	0	13.2667	16.652	1.8	16.6438	.519406
4	0	0	19.9	16.6312	1.1	16.6282	.317493
5	0	0	26.5333	16.3618	.5	16.3612	.14572
6	0	0	33.1667	15.8576	0.0	15.8576	8.1E-04
7	0	0	39.8	15.1297	359.6	15.1293	-.118308
8	0	0	46.4333	14.1893	359.1	14.1877	-.211883
9	0	0	53.0667	13.0483	358.8	13.0453	-.279864
10	0	0	59.7	11.7193	358.4	11.7149	-.322117
11	0	0	66.3333	10.2157	358.1	10.2101	-.338524
12	0	0	72.9667	8.54995	357.8	8.54362	-.328982
13	0	0	79.6	6.73209	357.5	6.7257	-.293305
14	0	0	86.2333	4.76356	357.2	4.75796	-.230887
15	0	0	92.8667	2.62108	356.9	2.61736	-.139643
END	0	0	99.5	0	0	0	0
TWR 2							
GND	84.5723	30.7818	0	5.20453	243.6	-2.31628	-4.66068
17	84.5723	30.7818	6.68667	5.76803	240.4	-2.84918	-5.01521
18	84.5723	30.7818	13.3733	6.07221	238.6	-3.16013	-5.1851
19	84.5723	30.7818	20.06	6.23565	237.3	-3.36458	-5.25004
20	84.5723	30.7818	26.7467	6.27614	236.3	-3.47996	-5.22301
21	84.5723	30.7818	33.4333	6.20128	235.5	-3.51334	-5.11002
22	84.5723	30.7818	40.12	6.01613	234.8	-3.46892	-4.91532
23	84.5723	30.7818	46.8067	5.72528	234.2	-3.35008	-4.64282
24	84.5723	30.7818	53.4933	5.33359	233.7	-3.16015	-4.29658
25	84.5723	30.7818	60.18	4.84633	233.2	-2.90261	-3.88095
26	84.5723	30.7818	66.8667	4.26907	232.8	-2.58114	-3.4004
27	84.5723	30.7818	73.5533	3.60726	232.4	-2.19934	-2.85924
28	84.5723	30.7818	80.24	2.86525	232.1	-1.76011	-2.2609
29	84.5723	30.7818	86.9267	2.04384	231.8	-1.26414	-1.606
30	84.5723	30.7818	93.6133	1.13304	231.5	-.705272	-.886772
END	84.5723	30.7818	100.3	0	0	0	0
TWR 3 (FLOATED - DISCONNECTED)							
GND	169.145	61.5636	0	1.15444	296.7	.518627	-1.03139
32	169.145	61.5636	6.76667	.983496	295.8	.428744	-.885123
33	169.145	61.5636	13.5333	.714935	294.8	.300024	-.648936
34	169.145	61.5636	20.3	.503388	293.3	.199081	-.462349
35	169.145	61.5636	27.0667	.323183	290.6	.11383	-.302473
36	169.145	61.5636	33.8333	.17089	284.3	.0421351	-.165614
37	169.145	61.5636	40.6	.0532889	251.6	-.0168058	-.0505695
38	169.145	61.5636	47.3667	.0765429	145.8	-.0633311	.0429882
39	169.145	61.5636	54.1333	.150923	130.3	-.0976274	.115095
40	169.145	61.5636	60.9	.20452	125.9	-.119851	.165724
41	169.145	61.5636	67.6667	.234357	123.7	-.130179	.194876
42	169.145	61.5636	74.4333	.240081	122.4	-.128817	.202596
43	169.145	61.5636	81.2	.221643	121.5	-.11596	.188889
44	169.145	61.5636	87.9667	.17877	120.8	-.0916694	.153477
45	169.145	61.5636	94.7333	.110025	120.3	-.0554487	.095031
END	169.145	61.5636	101.5	0	0	0	0

TWR 4 (FLOATED - DISCONNECTED)

GND	49.6062	-143.254	0	.98418	344.6	.948994	-.260808
47	49.6062	-143.254	6.68	.835334	344.2	.803951	-.226816
48	49.6062	-143.254	13.36	.604439	343.7	.58023	-.169349
49	49.6062	-143.254	20.04	.423213	342.9	.40451	-.124421
50	49.6062	-143.254	26.72	.269252	341.3	.255079	-.0862044
51	49.6062	-143.254	33.4	.139022	337.3	.128233	-.0536973
52	49.6062	-143.254	40.08	.0348491	310.5	.0226358	-.0264968
53	49.6062	-143.254	46.76	.062384	184.	-.0622285	-4.4E-03
54	49.6062	-143.254	53.44	.127229	174.3	-.126591	.0127244
55	49.6062	-143.254	60.12	.17244	171.7	-.170616	.0250088
56	49.6062	-143.254	66.8	.197197	170.5	-.194486	.032583
57	49.6062	-143.254	73.48	.201577	169.8	-.198412	.035581
58	49.6062	-143.254	80.16	.185722	169.4	-.182562	.0341169
59	49.6062	-143.254	86.84	.149528	169.1	-.146839	.028227
60	49.6062	-143.254	93.52	.0918927	168.9	-.0901692	.0177143
END	49.6062	-143.254	100.2	0	0	0	0

TWR 5

GND	134.058	-112.488	0	8.3982	280.6	1.54363	-8.25511
62	134.058	-112.488	6.68667	8.51002	278.1	1.19307	-8.42597
63	134.058	-112.488	13.3733	8.48782	276.4	.95061	-8.43442
64	134.058	-112.488	20.06	8.35822	275.1	.74342	-8.32509
65	134.058	-112.488	26.7467	8.12659	274.	.561616	-8.10716
66	134.058	-112.488	33.4333	7.79669	273.	.402059	-7.78632
67	134.058	-112.488	40.12	7.37254	272.1	.263766	-7.36782
68	134.058	-112.488	46.8067	6.85885	271.2	.146556	-6.85729
69	134.058	-112.488	53.4933	6.26103	270.5	.0505463	-6.26083
70	134.058	-112.488	60.18	5.5851	269.8	-.0240685	-5.58505
71	134.058	-112.488	66.8667	4.83738	269.1	-.0771161	-4.83676
72	134.058	-112.488	73.5533	4.024	268.5	-.108473	-4.02253
73	134.058	-112.488	80.24	3.14984	267.9	-.118025	-3.14762
74	134.058	-112.488	86.9267	2.21595	267.3	-.105473	-2.21344
75	134.058	-112.488	93.6133	1.21216	266.7	-.0697302	-1.21015
END	134.058	-112.488	100.3	0	0	0	0

TWR 6

GND	218.619	-81.7384	0	3.93132	174.2	-3.91117	.397566
77	218.619	-81.7384	6.65333	4.30497	166.6	-4.18833	.995301
78	218.619	-81.7384	13.3067	4.52962	162.4	-4.31696	1.37161
79	218.619	-81.7384	19.96	4.66295	159.2	-4.35976	1.65395
80	218.619	-81.7384	26.6133	4.71027	156.7	-4.32719	1.86067
81	218.619	-81.7384	33.2667	4.67318	154.7	-4.22427	1.99855
82	218.619	-81.7384	39.92	4.5529	152.9	-4.05467	2.07088
83	218.619	-81.7384	46.5733	4.35114	151.4	-3.82187	2.07984
84	218.619	-81.7384	53.2267	4.07029	150.1	-3.52949	2.0273
85	218.619	-81.7384	59.88	3.71339	149.	-3.18139	1.91521
86	218.619	-81.7384	66.5333	3.28391	147.9	-2.78154	1.74559
87	218.619	-81.7384	73.1867	2.7854	146.9	-2.33383	1.52044
88	218.619	-81.7384	79.84	2.22068	146.	-1.84138	1.24127
89	218.619	-81.7384	86.4933	1.58986	145.2	-1.30505	.908026
90	218.619	-81.7384	93.1467	.88464	144.4	-.718937	.515478
END	218.619	-81.7384	99.8	0	0	0	0