

FOR
FCC
USE
ONLY

BMM-20110301

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FCC 302-AM
APPLICATION FOR AM
BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY

FILE NO. **Bmm-20110301ACP**

SECTION I - APPLICANT FEE INFORMATION

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

Archangel Communications

MAILING ADDRESS (Line 1) (Maximum 35 characters)

399 S. Section Street

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY

Fairhope

STATE OR COUNTRY (if foreign address)

Alabama

ZIP CODE

36532

TELEPHONE NUMBER (include area code)

(540) 622-8070

CALL LETTERS

WNGL

OTHER FCC IDENTIFIER (If applicable)

FCC Id: 854

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		
M	M	R

(B)			
FEE MULTIPLE			
0	0	0	1

(C)
FEE DUE FOR FEE TYPE CODE IN COLUMN (A)
\$ 615.00

FOR FCC USE ONLY

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

(A)		
FEE TYPE CODE		
M	O	R

(B)			
FEE MULTIPLE			
0	0	0	1

(C)
FEE DUE FOR FEE TYPE CODE IN COLUMN (A)
\$ 705.00

FOR FCC USE ONLY

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
\$ 1320.00

FOR FCC USE ONLY

ORIGINAL

2 16386

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Archange Communications		
MAILING ADDRESS P.O. Box 1526		
CITY Fairhope	STATE Alabama	ZIP CODE 36532

2. This application is for:

- ☒ Commercial
 ☐ Noncommercial
☒ AM Directional
 ☐ AM Non-Directional

Call letters WNGL	Community of License Mobile, AL	Construction Permit File No. BNPED-20071022BPM	Modification of Construction Permit File No(s). BP-20100129ADD	Expiration Date of Last Construction Permit
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3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☒ Yes ☐ No

If No, explain in an Exhibit.

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.

ORIGINAL

Name	Signature	
Joseph Roszkowski		
Title	Date	Telephone Number
President	2/15/2011	(540) 622-8070

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.

Name of Applicant

Archangel Communications, 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	
WNGL	BP-20100129ADD	1410	U	Night 4.6	Day 5.0

2. Station location

State	City or Town
Alabama	Mobile

3. Transmitter location

State	County	City or Town	Street address (or other identification)
AL	Mobile	Mobile	901 Live Oak Street

4. Main studio location

State	County	City or Town	Street address (or other identification)
AL	Baldwin	Fairhope	399 South Section Street

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

State	County	City or Town	Street address (or other identification)
AL	Baldwin	Fairhope	399 South Section Street

6. Has type-approved stereo generating equipment been installed?

☐ Yes ☒ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68?

☒ Yes ☐ No☐ Not Applicable

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

Exhibit No.
6

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system 9.95		RF common point or antenna current (in amperes) without modulation for day system 9.59	
Measured antenna or common point resistance (in ohms) at operating frequency Night 50.2		Measured antenna or common point reactance (in ohms) at operating frequency Night -J0.2	
Day 54.4		Day -J0.8	

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(s)	0.0		1.000			
#2(n)	55.2		0.798			

Manufacturer and type of antenna monitor:

Potomac AM-19 (204)

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

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
Uniform cross section guyed steel tower	57.9	59.4	59.4	Exhibit No.

Antenna Structure Registration Number 1273480

Antenna Structure Registration Number 1273479

Excitation

☒ Series

☐ Shunt

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

North Latitude	30 °	42 '	24 "	West Longitude	88 °	03 '	43 "
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If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits.

Exhibit No.

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

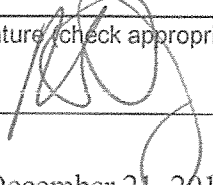
Exhibit No.

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

Correction of coordinates less than 3 seconds latitude and longitude per post construction survey.

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) R. Stuart Graham	Signature (check appropriate box below) 
Address (include ZIP Code) Graham Brock, Inc. P. O. Box 24466 St. Simons Island, GA 31522-7466	Date December 21, 2010
	Telephone No. (Include Area Code) 912-638-8028

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☒ Technical Consultant

☐ Other (specify)

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

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12)	Survey/Affidavit
13)	Summary of Post-Construction Certified Array Geometry
14)	Correction of Geographic Coordinates

LEGALWORKS APOSTOLATE, PLLC

STUART W. NOLAN, JR.
Managing Member

ATTORNEYS AT LAW
4 FAMILY LIFE LANE
FRONT ROYAL, VIRGINIA 22630

E. SCOTT LLOYD
Of Counsel

February 23, 2011

Federal Communications Commission
c/o US Bank
Government Lockbox # 979089
SL MO-C2-GL
1005 Convention Plaza
St. Louis, MO 63010

**Re: Archangel Communications
WNGL – Facility ID No. 854
FCC Form 302-AM
FRN: 0017024795**

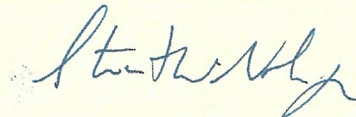
Dear Ms. Dortch:

On behalf of our client, Archangel Communications, enclosed is FCC Form 159, Fee Remittance Advice, and our check in the amount of \$1,320.

This check is in payment of the fee for the filing of FCC Form 302-AM, Application for a New License and AM Directional Antenna, on December 21st, 2010.

Please contact me if there are any questions. I appreciate your attention to this matter.

Best,



Stuart W. Nolan, Jr.

Enclosure
SWN/mrb

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

This Technical Statement was prepared on behalf of Archangel Communications, Inc. ("ACI"), licensee of radio station WNGL, 1410 kHz, Mobile, Alabama. ACI holds a valid construction permit (BP-20100129ADD) that authorizes WNGL to construct a non-directional antenna system with 5.0 kilowatts during daytime hours and a two tower directional antenna system with 4.6 kilowatts during nighttime hours. This application seeks program test authority and a station license with a computer analyzed directional operation under the provisions of Section 73.151(c). The calculations shown herein are for the daytime power of 5.0 kilowatts and the nighttime power of 4.6 kilowatts.

The towers are identified using the nighttime numbering sequence of Tower #1(s) and Tower #2(n). The Daytime tower is Tower #1(s). The towers and ground system were constructed in accordance with the terms of the WNGL construction permit and specifications that were provided in the application for construction permit.

Information is provided herein to demonstrate the directional antenna parameters for the nighttime authorized patterns have been determined to be in accordance with the requirements of Section 73.151(c) of the Commission's rules. The system has been adjusted to produce antenna monitor parameters within +/- 5 percent in ratio and +/- 3 degrees in phase of the modeled values, as required by the rules.

There are five special operating conditions and/or restrictions listed on the outstanding station license that will continue to be met. Condition #1 states:

“The permittee must submit a proof of performance as set forth in either Section 73.151(a) or 73.151(c) of the rules before program tests are authorized. A proof of performance based on field strength measurements, per Section 73.151(a), shall include a complete nondirectional proof of performance, in addition to a complete proof on the (night) directional antenna system. The nondirectional and directional field strength measurements must be made under similar environmental conditions. The proof(s) of performance submitted to the Commission must contain all of the data specified in Section 73.186 of the rules. Permittees who elect to submit a moment method proof of performance, as set forth in section 73.151(c), must use series-fed radiators. In addition, the sampling system must be constructed as described in Section 73.1515(c)(2)(i).”

This application supports the application for station license using the moment proof rules of 73.151(c).

Condition #2 states:

“Permittee shall install a type accepted transmitter, or submit application (FCC Form 301) along with data subscribed in Section 73.1660(b) should non-type accepted transmitter be proposed.”

The applicant has installed a Broadcast Electronics AM6A AM Transmitter, SN 111074-004, which is type accepted and is in compliance with this condition.

Condition #3 states:

“Prior to construction of the tower authorized herein, permittee shall notify AM Stations WNTM (Facility ID: 8695), WGOK (Facility ID: 56716) and WABB (Facility ID: 70656) so that, if necessary that AM station: may determine operating power by a method described in Section 73.51(a)(1) or (d), and/or request temporary authority from the Commission in Washington, D.C. to operate with parameters at variance in order to maintain monitoring point field strengths within

authorized limits. Permittee shall be responsible for installation and continued maintenance of detuning apparatus necessary to prevent adverse effects upon the radiation pattern of the AM station. Both prior to construction of the tower and subsequent to the installation of all appurtenances thereon, a partial proof of performance, as defined by Section 73.154(a) of the Commission's Rules, shall be conducted to establish that the AM array has not been adversely affected and prior to or simultaneous with the filing of the application for license to cover this permit, the results submitted to the Commission."

Attached as Exhibits #9, #10 and #11 are field measurements taken on the respective stations before and after construction of the WNGL towers. WNGL personnel were not provided access to the transmitter sites to log station operating parameters, but it is believed that none of the stations are adversely or significantly affected by the construction of the WNGL towers, as supported by the measurements. Re-licensing of the three stations is not required.

Condition #4 states:

"Licensee shall be responsible for satisfying all reasonable complaints of blanketing interference within the 1 V/m contour as required by Section 73.88 of the Commission's rules."

The applicant recognizes their responsibility in this matter and will continue to comply with this condition.

Condition #5 states:

"Ground system consists of 120 equally spaced, buried, copper radials about the base of each tower, each 53.34 meters in length except where terminated by property boundaries or where intersecting radials are shortened and bonded to a transverse copper strap midway between adjacent towers."

The applicant verifies the ground system is as described and accepts this condition.

Field measurements were conducted along the specified monitor point radials, which are detailed in Exhibit #7.

Following a Post-Construction Survey, it is necessary to correct the geographic coordinates of WNGL Center of Array. The correction of coordinates from: North Latitude 30° 42' 25"; West Longitude 88° 03' 45" to: North Latitude 30° 42' 24"; West Longitude 88° 03' 43" is less than 3 seconds of latitude and longitude and is, therefore, allowed within the scope of this Form 302 license application. When approval from the FAA is received for the minor correction of coordinates of the two towers, Antenna Structure Registration Number 1273479 and Antenna Structure Registration Number 1273480 will be modified.

We have tried to be as accurate as possible in the preparation of this application. All information contained in this application was extracted from the CDBS database. We assume no liability for omissions or errors in this source. Should there be any questions concerning the information contained herein, we welcome the opportunity to discuss the matter by phone at 912-638-8028 or by email at rsg@grahambrock.com.

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410Hz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
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EXHIBIT #1

Analysis of Tower Impedance Measurements to Verify Method of Moments Model

Tower base impedance measurements were made at the final J-plugs within the Antenna Tuning Units ("ATU's") using an Array Solutions, POWER AIM 120, Vector Impedance Analyzer in a calibrated measurement system. The other tower was open circuited at the same points where impedance measurements were made ("reference points") for each of the measurements, in compliance with Section 73.151(c)(1).

The reference point in each ATU is followed by the feed-line that exits the ATU enclosure and is connected to the tower above the base insulator. Circuit calculations were performed to relate the Method of Moments modeled impedances of the tower feed points to the ATU output measurement (reference) points, as shown on the following pages. The XL shown for each tower, which was calculated for the assumed stray inductance, was less than 10 uH, in compliance with Section 73.151(c)(1)(vii).

The modeled and measured base impedances at the ATU output jacks, with the other towers open circuited at their ATU output jacks agree within +/- 2 ohms and +/- 4 percent for resistance, as required by Section 73.151(c)(2) of the FCC's Rules.

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EXHIBIT #1A

WNGL Mobile AL
1410

TOWER	L(uH) - series	X(L)	Z(tower-modeled)		Z(ATU-measured)		Z(tower-measured)	
1 (s)	2.21	+j 19.6	83.4	+j 128.05	83.4	+j 147.65	41.9	+j 128.05
2 (n)	2.41	+j 21.4	79.1	+j 119.99	79.0	+j 141.35	45.5	+j 119.99

From Moment Method Calculated Values

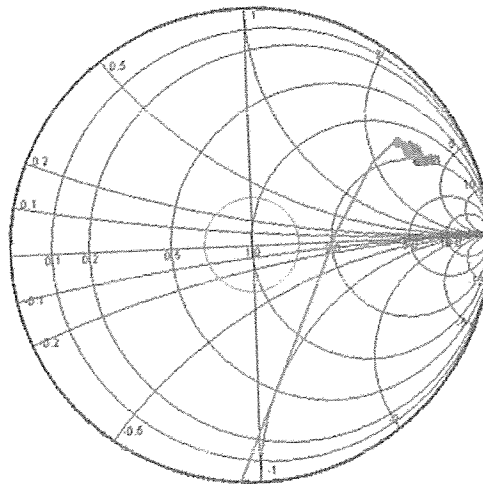
Tower Impedance Tolerance Resistance & Reactance +/- 2 Ohms and +/- 4%

Tower	Resistance	(+/- ohms)	High	Low
1 (s)	83.41	5.34	88.7	78.1
2 (n)	79.08	5.16	84.2	73.9
	Reactance	(+/- ohms)	High	Low
1 (s)	128.05	7.12	135.2	120.9
2 (n)	119.99	6.80	126.8	113.2

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EXHIBIT #1B

Tower #1 Impedance Measurements

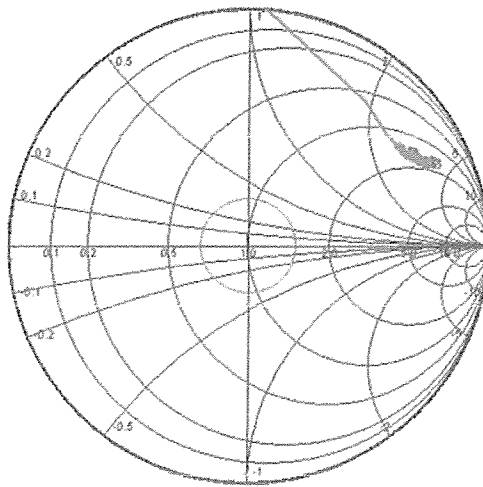


Marker	Freq	Rs	Xs
[1]	1.380000	73.278	133.853
[2]	1.395000	75.407	134.372
[3]	1.390000	77.256	134.641
[4]	1.395000	77.888	136.728
[5]	1.400000	78.390	140.305
[6]	1.405000	80.042	144.265
[7]	1.410000	83.409	147.651
[8]	1.415000	88.019	150.986
[9]	1.420000	92.611	151.900
[10]	1.425000	95.821	153.918
[11]	1.430000	96.953	156.922
[12]	1.435000	96.495	161.084
[13]	1.440000	96.181	165.740

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EXHIBIT #1C

Tower #2 Impedance Measurements



Marker	Freq	Rs	Xs
[1]	1.380000	69.914	131.490
[2]	1.385000	70.771	134.533
[3]	1.390000	71.566	135.943
[4]	1.395000	73.009	136.782
[5]	1.400000	74.976	137.769
[6]	1.405000	77.099	139.264
[7]	1.410000	79.077	141.351
[8]	1.415000	80.707	143.939
[9]	1.420000	82.255	146.891
[10]	1.425000	83.557	150.146
[11]	1.430000	84.683	153.795
[12]	1.435000	85.454	158.071
[13]	1.440000	85.584	163.188

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EXHIBIT #2

Derivation of Operating Parameters for Directional Antenna

The Method of Moments model of the array, following verification with the measured individual open circuited base impedances, was utilized for directional antenna calculations. Calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern. With these voltage sources, the tower currents were calculated. Ten segments were used for each tower, so that the modeled current pulse at the base of the tower would correspond to the toroid pick-up at the output of the ATU. As the tower structures, sampling pickups, and sampling lines are identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled tower currents.

APPLICATION FOR STATION LICENSE
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WNGL AM RADIO STATION

1410 kHz - 4.6/5.0 kW DAN

MOBILE, ALABAMA

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EXHIBIT #2A

Nighttime Directional Operating Parameters

WNGL Mobile AL
 1410

Tower	Current Magnitude (amperes)	Current Phase (degrees)	Moment Method Calculations of Antenna Monitor Values		Antenna Monitor As Adjusted Antenna Monitor Values	
			Ratio	Phase	Ratio	Phase
1 (s)	5.65	0.00	1.000	0.0	1.000	0.0
2 (n)	4.51	55.23	0.798	55.2	0.800	58.0

Operating Parameter Tolerances

Tower	Ratio (5%)		Phase (3°)	
	(+)	(-)	(+)	(-)
1 (s)	1.000	1.000	0.0	0.0
2 (n)	0.838	0.758	58.2	52.2

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EXHIBIT #3

Method of Moments Model Details for Towers Driven Individually

The array of towers was modeled using Westberg Engineering PhasorPro 2.1.1.12. One wire was used to represent each tower. The electrical length of each tower was specified using degrees at the operating frequency of 1410 kHz (1.41 MHz), as taken from the theoretical directional antenna specifications. Each tower was modeled using nine segments. As the towers are 98.1 degrees in electrical height, the segment length is 9.81 electrical degrees, in compliance with Section 73.151(c)(1)(iii).

The individual tower characteristics were adjusted to provide a match of their modeled impedances, when presented to a circuit model, that included branches representing the stray feed-line hookup inductances at the tower bases, with the base impedances that were measured at the output jacks of the ATU's, while the other towers of the array were open circuited. The Method of Moments model assumed loads at ground level having the reactance that was calculated for them using the base circuit models for the open circuited towers of the array.

Each tower's modeled height, relative to its physical height, falls within the required range of 75% to 125%, in compliance with Section 73.151(c)(1)(v). Each tower's modeled

radius falls within the range of 80% to 150% of the radius of a circle having a circumference equal to the sum of the widths of the tower sides, which is in compliance with Section 73.151(c)(1)(i). The array consists of identical, uniform cross section towers having a face dimension of 18 inches.

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EXHIBIT #3A

WNGL Mobile AL
1410

Tower	Physical Height (degrees)	Velocity Factor Adjustment	Modeled Height (degrees)	Modeled Percent of Height	Physical Equivalent Radius (inches)	Modeled Radius (inches)	Percent of Equivalent Radius
1 (s)	98.1	0.90720	108.13	110.2%	8.314	8.314	100.0%
2 (n)	98.1	0.91795	106.87	108.9%	8.314	8.314	100.0%

Tower Height Tolerance >75% <125%				Tower Radius Tolerance >80% <150%		
Tower	Height	Minimum	Maximum	Actual	Minimum	Maximum
1 (s)	98.1	73.6	122.6	8.314	6.651	12.471
2 (n)	98.1	73.6	122.6	8.314	6.651	12.471

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EXHIBIT# 4

Method of Moments Model Details for Directional Antenna

The array of towers was modeled using Westberg Engineering PhasorPro 2.1.1.12 with the individual tower characteristics that were verified by the individual tower impedance measurements. Calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the tower that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern. The following pages contain details of the method of moments model of the directional antenna pattern.

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EXHIBIT #4A

STATION INFORMATION		
Call Letters	No. Towers	Frequency
WNGL	2	1.4100

TOWER INFORMATION						
	Tower Height (°)	Spacing (°)	Orientation	Face Width (in.)	Radius (in.)	Velocity Factor
Tower 1	98.1000	0.0000	0.0000	18.0000 / 18.0000	8.3138 / 8.3138	0.907200
Tower 2	98.1000	120.0000	0.0000	18.0000 / 18.0000	8.3138 / 8.3138	0.917950

MATRIX INFORMATION		
	Impedance (other towers open)	Impedance (other towers shorted)
Tower 1	83.41 + j128.05	97.17 + j120.40
Tower 2	79.08 + j119.99	91.98 + j112.72

DETUNED TOWER CURRENTS	
Tower 1	
0.000000	> 0.000000 - 98.10° above ground
0.106623	> -159.265028 - 88.29° above ground
0.166746	> -158.993744 - 78.48° above ground
0.194719	> -158.740790 - 68.67° above ground
0.189702	> -158.475198 - 58.86° above ground
0.150826	> -158.130261 - 49.05° above ground
0.077517	> -157.314996 - 39.24° above ground
0.030636	> 18.229292 - 29.43° above ground
0.174394	> 21.103937 - 19.62° above ground
0.356741	> 21.533576 - 9.81° above ground
0.648766	> 21.804518 - -0.00° above ground
Tower 2	
0.000000	> 0.000000 - 98.10° above ground
0.104829	> -159.663671 - 88.29° above ground
0.163745	> -159.395625 - 78.48° above ground
0.191061	> -159.142976 - 68.67° above ground
0.186022	> -158.874924 - 58.86° above ground
0.147827	> -158.523895 - 49.05° above ground
0.075935	> -157.690696 - 39.24° above ground
0.030075	> 17.764752 - 29.43° above ground
0.170999	> 20.696709 - 19.62° above ground
0.349852	> 21.137090 - 9.81° above ground
0.637030	> 21.416131 - -0.00° above ground

ZMatrix	
83.41 + j128.05	11.31 - j46.21
11.31 - j46.21	79.08 + j119.99

YMatrix	
0.004059 - j0.005030	0.002135 - j0.000147
0.002135 - j0.000147	0.004346 - j0.005326

HMatrix - [I] = [H] X [F]	
0.018555 + j0.002838	0.001382 + j0.000802
0.001354 + j0.000785	0.019098 + j0.002790

HMatrix-inverse - [F] = [H] ⁻¹ X [I]	
52.966338 - j7.843119	-4.311530 - j1.025663
-4.225319 - j1.004843	51.560318 - j7.282217

TOWER CURRENTS
Mode 1
Tower 1
0.000000 > 0.000000 - 98.10° above ground
1.585372 > -19.413160 - 88.29° above ground
2.839705 > -18.460145 - 78.48° above ground
3.937886 > -17.436927 - 68.67° above ground
4.864059 > -16.297235 - 58.86° above ground
5.597836 > -14.996099 - 49.05° above ground
6.119090 > -13.470365 - 39.24° above ground
6.411152 > -11.622032 - 29.43° above ground
6.460683 > -9.279791 - 19.62° above ground
6.257497 > -6.122479 - 9.81° above ground
5.648757 > 0.000000 - -0.00° above ground
Tower 2
0.000000 > 0.000000 - 98.10° above ground
1.074055 > 47.708237 - 88.29° above ground
1.941523 > 48.147609 - 78.48° above ground
2.719976 > 48.610785 - 68.67° above ground
3.398510 > 49.114966 - 58.86° above ground
3.962590 > 49.675154 - 49.05° above ground
4.397138 > 50.311920 - 39.24° above ground
4.688649 > 51.056476 - 29.43° above ground
4.825183 > 51.962238 - 19.62° above ground
4.795695 > 53.125344 - 9.81° above ground
4.511945 > 55.233252 - -0.00° above ground

FIELD INFORMATION - NIGHT		
	Field Ratio	Field Phase
Tower 1	1.0000	0.0000
Tower 2	0.7200	63.0000

TOWER DRIVE INFORMATION - NIGHT					
	Field Ratios	Field Phase	Drive Imped. (Ω)	Current	Power (W)
Tower 1	1.0000	0.0000	$118.88 + j114.43$	$5.65 \angle 0.00$	3793.2001
Tower 2	0.7200	63.0000	$39.63 + j75.37$	$4.51 \angle 55.23$	806.7999

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EXHIBIT #5

Direct Measurement of Power

WNGL will operate with a non-directional daytime power of 5.0 kilowatts and a common point impedance of 54.4 -j 0.8 ohms and a nighttime common point impedance of 50.2 -j 0.2 ohms.

Daytime

5,000 Watts

Common Point Resistance = 54.4 Ohms

Manipulating $I^2R = P$

Where I = Common Point Current R = Common Point Resistance P = Power in Watts

$$I = (5,000/54.4)^{.5} = 9.59 \text{ Amps at Common Point}$$

The daytime non-directional power will be monitored at the common point.

Daytime tower impedance was checked under power with a Delta Operating Impedance Bridge, OIB-2, SN 1221 and found to be 112 ohms Resistance, +138.2 ohms Reactance.

Nighttime

Due to the nighttime directional antenna operation, the common point input powers are adjusted with reference to the transmitted power, in accordance with Section 73.51(b)(1)¹.

Adjusting the input power by 1.08 results in the following:

$$4,600 \text{ Watts} \times 1.08 = 4,968 \text{ Watts}$$

$$\text{Common Point Resistance} = 50.2 \text{ Ohms}$$

$$\text{Manipulating } I^2R = P$$

$$\text{Where } I = \text{Common Point Current} \quad R = \text{Common Point Resistance} \quad P = \text{Power in Watts}$$

$$I = (4,968/50.2)^{.5} = 9.95 \text{ Amps at Common Point}$$

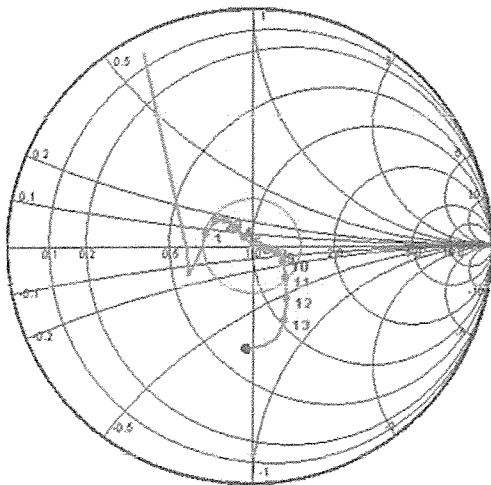
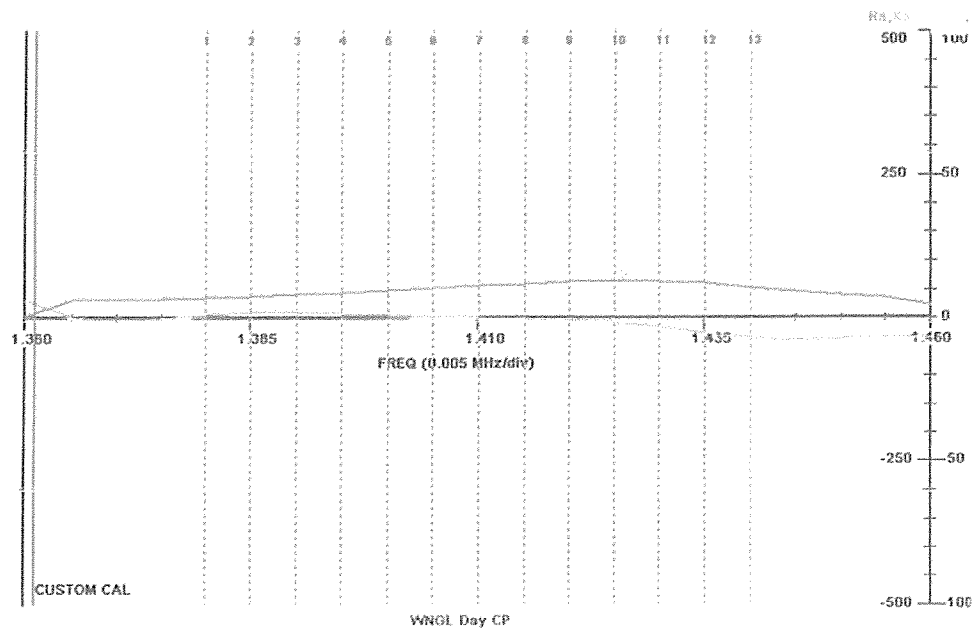
Common point impedance was measured utilizing an Array Solutions, POWER AIM 120, Vector Impedance Analyzer in a calibrated measurement system.

1) Section 73.51 Determining operating power. (b) The authorized antenna input power for each station shall be equal to the nominal power for such station, with the following exceptions: (1) For stations with nominal powers of 5 kilowatts, or less, the authorized antenna input power to directional antennas shall exceed the nominal power by 8 percent.

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EXHIBIT #5A

Daytime Common Point Measurements / Impedance

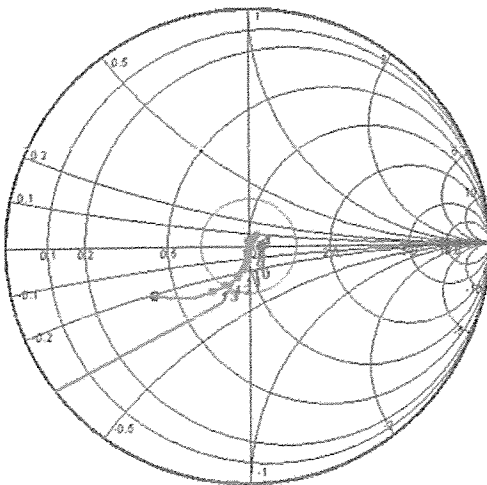
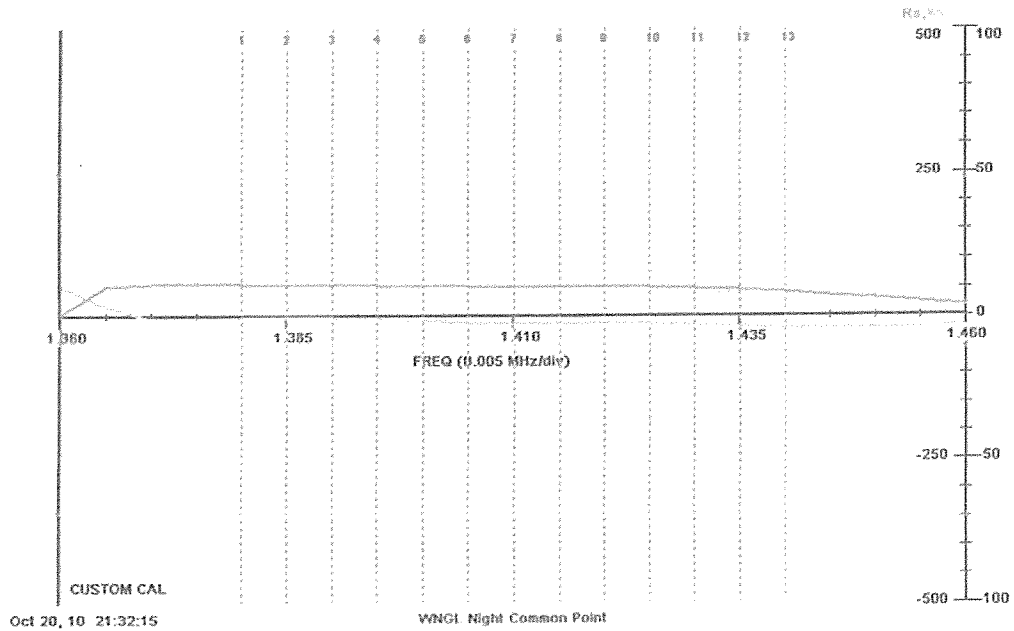


Marker	Freq	Rs	Xs
[1]	1.380000	34.426	3.717
[2]	1.385000	36.629	8.076
[3]	1.390000	39.595	8.707
[4]	1.395000	43.247	6.537
[5]	1.400000	47.013	3.326
[6]	1.405000	50.705	0.668
[7]	1.410000	54.380	-0.888
[8]	1.415000	57.949	-1.754
[9]	1.420000	61.074	-3.832
[10]	1.425000	63.063	-8.847
[11]	1.430000	62.664	-17.420
[12]	1.435000	58.640	-27.823
[13]	1.440000	51.462	-36.365

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EXHIBIT #5B

Nighttime Common Point Measurements / Impedance



Marker	Freq	Rs	Xs
[1]	1.380000	53.125	4.944
[2]	1.385000	51.642	3.291
[3]	1.390000	50.213	2.231
[4]	1.395000	49.431	1.936
[5]	1.400000	49.373	1.841
[6]	1.405000	49.785	1.282
[7]	1.410000	50.227	-0.200
[8]	1.415000	50.173	-2.722
[9]	1.420000	49.149	-5.926
[10]	1.425000	46.907	-9.179
[11]	1.430000	43.509	-11.820
[12]	1.435000	39.262	-13.442
[13]	1.440000	34.557	-13.991

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EXHIBIT #6

Sampling System And Measurements

The sample system for WNGL consists of electrically equal lengths of Cellflex LCF12-50J phase stabilized coaxial transmission lines terminated into Delta TCT-1 toroid sample transformers. The impedance at the input to the sample lines, terminated by the toroid sample transformers, was measured and tabulated in Exhibits #6A and #6B.

Impedance measurements of the antenna monitor sampling lines were made using an Array Solutions, POWER AIM 120, Vector Impedance Analyzer in a calibrated measurement system. The measurements were made looking into the antenna monitor ends of the sampling lines without the sampling lines connected to the toroid samples under open-circuited conditions.

Exhibits #6C and #6D detail the sample transmission line measurements with frequencies above and below carrier frequency where resonance (zero reactance corresponding with low resistance) was found. As the length of a distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent frequencies of resonance and frequencies of resonance occurring at odd multiples of 90 degrees electrical length, the sampling line length at the resonant frequency below carrier frequency, which is the closest one to the carrier frequency,

was found to be between 296.0 and 296.7 electrical degrees, within the 1.0 degree variance, as specified by Section 73.151(c)(2)(i). The electrical length at carrier frequency appearing in Exhibit #6A was calculated by ratio of the frequencies.

In order to determine the characteristic impedance values of the sampling lines, open-circuit measurements were made with frequencies offset to produce +/- 45 degrees of electrical length from resonance. The characteristic impedance was calculated using the following formula where $R_1 + jX_1$ and $R_2 + jX_2$ are the measured impedances at the +45 and -45 degree offset frequencies, respectively:

$$Z_0 = ((R_1^2 + X_1^2)^{1/2} * (R_2^2 + X_2^2)^{1/2})^{1/2}$$

Toroid current transformer calibration was checked by placing each transformer in line at the transmitter output connected to the station's common point. The transformers were connected to the station's antenna monitor with short equal length transmission line jumpers. The relative ratio and phase of all transformers was found to compare identically to each other, within the manufacturer's specifications.

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EXHIBIT #6A

WNGL Mobile AL
1410 kHz

Sample Line and Sample Transformer Combined Impedance at 1410 kHz

Tower Sample System	Sample Transformer Make / Type / Serial #	Resistance (ohms)	Reactance (ohms)	Supporting Exhibit
1 (s)	Delta / TCT-1 / 17633	49.1	-1.0	6B
2 (n)	Delta / TCT-1 / 17634	49.1	-1.2	6C

Sample Line Length and Impedance Calculations

Tower Sample Line	Open Circuit Resonance (kHz)	Calculated Electrical Length at 1410 kHz (degrees)	Measured Characteristic Impedance	Supporting Exhibit
1 (s)	1283.2	296.7	49.6	6D
2 (n)	1286.0	296.0	49.7	6E

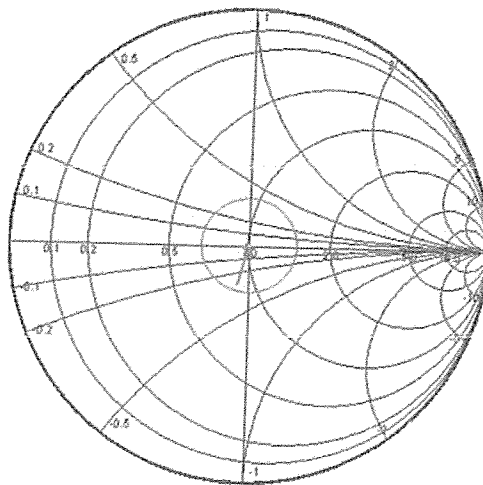
Sample Line Lengths - +/- 0.35 Degrees

Characteristic Impedance - +/- 0.05 Ohms

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EXHIBIT #6B

Tower #1 Sample and Toroid

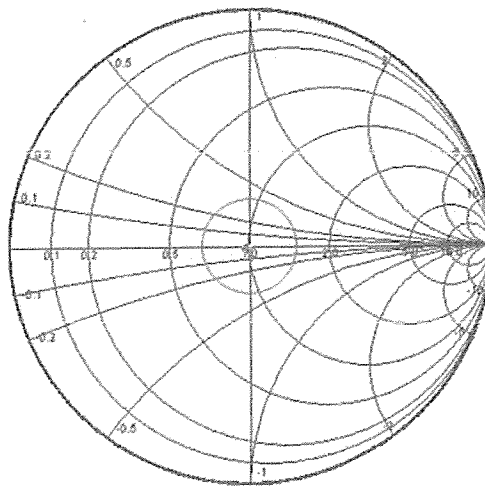


Marker	Freq	Rs	Xs
[3]	1.380000	49.489	-1.330
[4]	1.385000	49.434	-1.270
[5]	1.390000	49.450	-1.332
[6]	1.395000	49.212	-1.150
[7]	1.400000	49.463	-1.334
[8]	1.405000	49.424	-1.022
[9]	1.410000	49.122	-0.963
[10]	1.415000	49.235	-1.052
[11]	1.420000	49.112	-1.079
[12]	1.425000	49.030	-1.035
[13]	1.430000	49.094	-1.089
[14]	1.435000	49.283	-1.167
[15]	1.440000	49.083	-0.936

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EXHIBIT #6C

Tower #2 Sample and Toroid

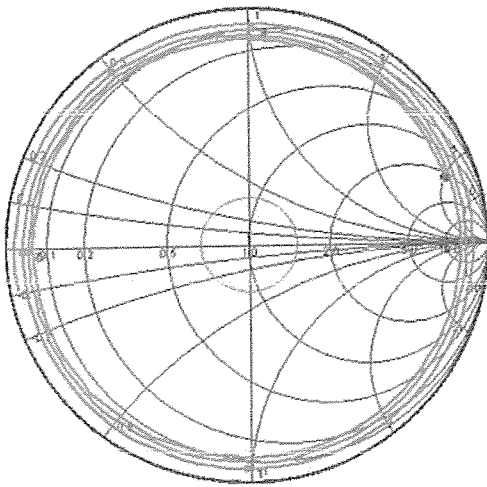


Marker	Freq	Rs	Xs
[3]	1.380000	49.630	-1.564
[4]	1.385000	49.498	-1.485
[5]	1.390000	49.323	-1.387
[6]	1.395000	49.308	-1.260
[7]	1.400000	49.341	-1.429
[8]	1.405000	49.520	-1.217
[9]	1.410000	49.133	-1.164
[10]	1.415000	49.298	-1.229
[11]	1.420000	49.262	-1.088
[12]	1.425000	49.269	-1.116
[13]	1.430000	49.117	-1.276
[14]	1.435000	49.151	-1.271
[15]	1.440000	49.071	-1.038

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EXHIBIT #6D

WNGL Sample Line - Tower #1



Marker	Freq	SWR	Rs	Xs
[1]	1.069320	29.8242	3.318	-49.413
[2]	1.283188	24.4743	2.208	-0.000
[3]	1.410000	21.8244	2.862	24.939
[4]	1.497050	19.8955	4.981	49.387
[5]	2.142954	18.6074	2.799	-0.000

Station Freq (MHz)
1.41

Resonant Freq (MHz)
1.283188

Resonant Freq (MHz)
2.1430

Closest To Station Freq
1.2832

Line Velocity Factor From Mfg. (%)
88

Length of Line ° @ Station Freq
296.7

Calculated Physical Length
506.1 feet

-45° Offset (MHz)
1.06932
+45° Offset (MHz)
1.49705

Resistance
3.200
3.200

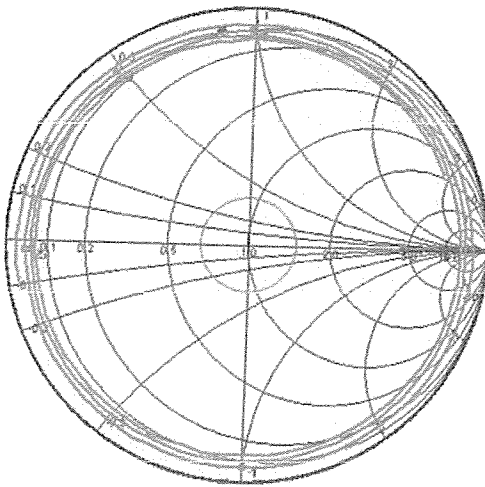
Impedance at Offset Freq
Reactance
-49.500
49.400

Line Characteristic Impedance (Ohms)
49.6

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EXHIBIT #6E

WNGL Sample Line - Tower #2



Marker	Freq	Rs	Xs
[1]	1.069320	3.523	-50.461
[2]	1.283188	2.346	-0.511
[3]	1.410000	2.968	24.195
[4]	1.497050	5.066	48.252
[5]	2.142954	2.901	-0.677

Station Freq (MHz)	1.41	Resonant Freq (MHz)	1.285997	Resonant Freq (MHz)	2.1469
Closest To Station Freq	1.2860	Line Velocity Factor From Mfg. (%)	88		
Length of Line * @ Station Freq	296.0	Calculated Physical Length	505.0	feet	
-45° Offset (MHz)	1.07166	Resistance	3.300	Impedance at Offset Freq	
+45° Offset (MHz)	1.50033		5.000	Reactance	-49.500
				Line Characteristic Impedance (Ohms)	49.7

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EXHIBIT #7

Reference Field Strength Measurements

Reference field strength measurements were made using a Potomac Instruments field strength meter of known calibration at three locations along radials on the station monitor point azimuths as specified in the construction permit. The tabulated measured field strengths and descriptions and GPS coordinates for the reference measurement points during nighttime operation are attached as Exhibit #7A. The GPS unit used was a Garmin V system with WAAS activated, Datum NAD '27, CONUS and coordinate format DD-MM-SS.s.

WNGL Mobile AL Nighttime Array Field Measurements
1410

Radial ("T)	Point #	N. Latitude	W. Longitude	Dist (mi)	Dist (km)	mw/m	Time (24 hr)	Date	Description
Monitor Point Radial Specified on Construction Permit									
13.0	1	30-43-16.3	88-03-16.8	1.03	1.66	70.00	1402	10/21/2010	Hwy 43 at Rail Yard
13.0	2	30-44-01.9	88-03-18.2	1.92	3.09	23.00	1412	10/21/2010	Log Delivery Road
13.0	3	30-44-11.0	88-03-16.9	2.09	3.36	13.00	1418	10/21/2010	End of Edwards Street
Monitor Point Radial Specified on Construction Permit									
180.0	1	30-40-22.6	88-03-42.9	2.34	3.77	110.00	1309	10/21/2010	Virginia Avenue at East Corner of Cemetary
180.0	2	30-39-56.7	88-03-42.9	2.84	4.57	80.00	1315	10/21/2010	1111 Baltimore Street
180.0	3	30-39-42.2	88-03-43.0	3.12	5.02	31.00	1320	10/21/2010	1062 Alba Street
Monitor Point Radial Specified on Construction Permit									
347.0	1	30-43-48.4	88-04-05.5	1.66	2.67	68.00	1423	10/21/2010	Hwy 90A
347.0	2	30-44-04.4	88-04-09.7	1.97	3.17	27.00	1428	10/21/2010	704 Meagher Avenue
347.0	3	30-44-39.2	88-04-19.2	2.66	4.28	10.10	1440	10/21/2010	Vacant Lot on Diaz Street Pritchard, AL

Geographic Coordinates Datum: NAD '27 CONUS
Latitude and Longitude Format: DD-MM-SS.s

GPS: Garmin V : WAAS Enabled

FIM: Potomac : FIM-21 : S/N 379 : Calibrated May 21, 2009

Field Measurements: R. Stuart Graham Jr.

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EXHIBIT #8

Antenna Monitor Calibration

The antenna monitor at the site is a Potomac Instruments AM-19 (204), SN 1077 and was calibrated on site according to the manufacturer's specifications.

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EXHIBIT #9

WGOK Partial Proof Measurements

Attached as Exhibits #9A through #9D are tabulations of field measurements conducted on WGOK's (900 kHz) directional antenna which demonstrates a lack of significant impact on the WGOK directional antenna system. All monitor points remain in tolerance with their station license limits. While the WNGL personnel were not provided access to the transmitter site to log operating parameters of WGOK before and after the construction of the WNGL towers, no change outside of licensed limits resulted from the WNGL construction as verified by WGOK personnel. A filter to preclude interference to the WGOK (900 kHz) transmitter by WNGL (1410 kHz) was installed; no impact on the operation of WGOK was noted. Mike Gliner conducted the field measurements and his affidavit is included with this application.

Field Intensity Measurements

Radio Station Call Sign: WGOK - 900 kHz
 Azimuth (degrees True): 135.0

Type of Measurements:
 Pre / Post Construction
 of WNGL Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION		
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME
5	1.30	2.09	142.00	06/30/10	1150	140.00	10/05/10	931
6	1.45	2.33	52.00	06/30/10	1205	80.00	10/05/10	936
7	1.87	3.01	48.00	06/30/10	1210	59.10	10/05/10	941
8	2.08	3.35	47.00	06/30/10	1215	57.00	10/05/10	948
9	2.44	3.93	51.00	06/30/10	1226	45.00	10/05/10	958
10	3.21	5.17	34.10	06/30/10	1241	33.00	10/05/10	1012
11	3.24	5.21	33.00	06/30/10	1247	34.10	10/05/10	1017
12	3.42	5.50	26.20	06/30/10	1253	28.00	10/05/10	1021

PRIE/POST Ratio
 Logarithmic Mean

0.041

Antilog Mean

1.099

EXHIBIT #9A
 APPLICATION FOR STATION LICENSE
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Field Intensity Measurements

Radio Station Call Sign: WGOK - 900 kHz
Azimuth (degrees True): 175.0

Type of Measurements:
Pre / Post Construction
of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION			
	miles	Kilometers	measured	DATE	TIME	FI	measured	DATE	TIME	PRE / POST RATIO LOG
10	1.96	3.15	12.10	06/30/10	1339	11.10	11.10	10/05/10	1051	-0.037
11	2.11	3.40	13.10	06/30/10	1334	13.00	13.00	10/05/10	1056	-0.003
12	2.35	3.78	13.00	06/30/10	1330	11.20	11.20	10/05/10	1102	-0.065
13	2.77	4.46	9.80	06/30/10	1326	11.10	11.10	10/05/10	1108	0.054
14	3.08	4.96	9.20	06/30/10	1321	7.00	7.00	10/05/10	1113	-0.119
15	3.21	5.17	6.4	06/30/10	1318	6.2	6.2	10/05/10	1116	-0.014
16	3.54	5.70	8.3	06/30/10	1314	8.1	8.1	10/05/10	1124	-0.011
17	3.95	6.36	5.4	06/30/10	1307	6.1	6.1	10/05/10	1127	0.053

Monitor point Maximum 21.24

PRE/POST Ratio
Logarithmic Mean

-0.018

Antilog Mean

0.960

EXHIBIT #9B
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGLAM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign: WGOK - 900 kHz
 Azimuth (degrees True): 220.0

Type of Measurements:
 Pre / Post Construction
 of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION			
	miles	Kilometers	measured	DATE	TIME	FI	measured	DATE	TIME	PRE / POST RATIO LOG
8	1.86	2.99	21.00	06/30/10	1354	21.10	21.10	10/05/10	1313	0.002
9	2.08	3.35	21.50	06/10/10	1359	20.20	20.20	10/05/10	1309	-0.027
10	2.34	3.77	14.10	06/10/10	1403	13.20	13.20	10/05/10	1303	-0.029
11	2.55	4.10	11.20	06/10/10	1407	10.90	10.90	10/05/10	1254	-0.012
12	2.89	4.65	9.40	06/10/10	1412	8.60	8.60	10/05/10	1248	-0.039
13	3.21	5.17	12.10	06/10/10	1428	11.00	11.00	10/05/10	1240	-0.041
15	4.88	7.85	6.40	06/10/10	1444	6.21	6.21	10/05/10	1222	-0.013
16	6.40	10.30	4.40	06/10/10	14546	4.30	4.30	10/05/10	1214	-0.010
17	6.90	11.10	2.70	06/30/10	1509	2.58	2.58	10/05/10	1209	-0.020

Monitor point Maximum 19.14

PRE/POST Ratio
 Logarithmic Mean

-0.021

Antilog Mean

0.953

EXHIBIT #9C
 APPLICATION FOR STATION LICENSE
 ARCHANGEL COMMUNICATIONS, INC.
 WNGLAM RADIO STATION
 1410 kHz - 4.6/5.0 KW DAN
 MOBILE, ALABAMA
 December 2010

Field Intensity Measurements

Radio Station Call Sign: WGOK - 900 kHz
 Azimuth (degrees True): 265.0

Type of Measurements:
 Pre / Post Construction
 of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION			
	miles	Kilometers	measured	DATE	TIME	FI	measured	DATE	TIME	PRE / POST RATIO LOG
7	1.88	3.03	10.10	06/30/10	1618	9.20	9.20	10/05/10	1346	-0.041
8	2.28	3.67	6.80	06/30/10	1613	6.10	6.10	10/05/10	1350	-0.047
9	2.70	4.35	6.40	06/30/10	1609	5.80	5.80	10/05/10	1354	-0.043
10	2.90	4.67	8.50	06/30/10	1605	7.82	7.82	10/05/10	1359	-0.036
11	3.24	5.21	6.20	06/30/10	1600	5.76	5.76	10/05/10	1406	-0.032
12	3.44	5.54	5.90	06/30/10	1555	5.61	5.61	10/05/10	1434	-0.022
13	3.80	6.12	4.10	06/30/10	1549	3.50	3.50	10/05/10	1438	-0.069
14	4.43	7.13	1.85	06/30/10	1543	1.90	1.90	10/05/10	1443	0.012

PRE/POST Ratio
 Logarithmic Mean

-0.035

Antilog Mean

0.923

EXHIBIT #9D
 APPLICATION FOR STATION LICENSE
 ARCHANGEL COMMUNICATIONS, INC.
 WNGLAM RADIO STATION
 1410 kHz - 4.6/5.0 kW DAN
 MOBILE, ALABAMA
 December 2010

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

EXHIBIT #10

WABB Partial Proof Measurements

Attached as Exhibits #10A through #10D are tabulations of field measurements conducted on WABB's (1480 kHz) directional antenna which demonstrates a lack of significant impact on the WABB directional antenna system. While the WNGL personnel were not provided access to the transmitter site to log operating parameters of WABB before and after the construction of the WNGL towers, no change is believed to have resulted from the WNGL construction. Mike Gliner conducted the field measurements and his affidavit is included with this application.

Field Intensity Measurements

Radio Station Call Sign: WABB - 1480
Azimuth (degrees True): 4.3

Type of Measurements:
Pre / Post Construction
of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION				PRE / POST RATIO	
	miles	Kilometers	measured FI	DATE	24 HR TIME		measured FI	DATE	24 HR TIME			LOG
17	1.80	2.90	23.10	07/29/10	1045		22.10	10/28/10	1054			-0.019
18	2.00	3.22	13.20	07/29/10	1051		15.00	10/28/10	1059			0.056
19	3.05	4.91	9.10	07/29/10	1059		9.34	10/28/10	1107			0.011
20	5.05	8.13	6.20	07/29/10	1108		6.90	10/28/10	1116			0.046
21	6.07	9.77	2.31	07/29/10	1121		3.42	10/28/10	1136			0.170
23	7.10	11.43	1.41	07/29/10	1134		2.31	10/28/10	1145			0.214
24	7.65	12.31	1.32	07/29/10	1141		1.32	10/28/10	1152			0.000
25	8.69	13.99	1.25	07/29/10	1149		1.09	10/28/10	1159			-0.059
26	9.35	15.05	0.84	07/29/10	1203		0.76	10/28/10	1219			-0.043
27	10.20	16.42	0.62	07/29/10	1211		0.71	10/28/10	1224			0.059
28	12.60	20.28	0.53	07/29/10	1222		0.48	10/28/10	1235			-0.043

Monitor point Maximum 26.6

PRE/POST Ratio
Logarithmic Mean

0.036

Antilog Mean

1.085

EXHIBIT #10A
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Cell Sign:

WABB - 1480

Azimuth (degrees True):

60.0

Type of Measurements:

Pre / Post Construction
of WNGl Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION			PRE / POST RATIO LOG
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME	
7	0.80	1.29	70.00	07/16/10	1100	78.00	10/28/10	946	0.047
8	0.90	1.45	56.00	07/16/10	1109	52.00	10/28/10	950	-0.032
9	1.00	1.61	52.00	07/16/10	1117	61.00	10/28/10	954	0.069
10	1.10	1.77	34.00	07/16/10	1122	41.00	10/28/10	1001	0.081
13	1.40	2.25	29.00	07/16/10	1140	32.00	10/28/10	1013	0.043
14	1.50	2.41	38.00	07/16/10	1148	41.00	10/28/10	1016	0.033
16	1.70	2.74	51.00	07/16/10	1156	31.00	10/28/10	1020	-0.216
17	1.80	2.90	32	07/16/10	1203	27	10/28/10	1025	-0.074
20	2.12	3.41	42	07/16/10	1224	34	10/28/10	1034	-0.092
21	2.50	4.02	27	07/16/10	1229	26	10/28/10	1039	-0.016

Monitor point Maximum 48.4

PRE/POST Ratio
Logarithmic Mean

-0.016

Antilog Mean

0.965

Note: Although monitor point value is above maximum for racial the overall impact of the WNGl construction on WABB is negligible

EXHIBIT #10B
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGl AM RADIO STATION
1410 RHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign: WABB - 1480
Azimuth (degrees True): 244.0

Type of Measurements:
Pre / Post Construction
of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION			
	miles	Kilometers	measured FI	DATE	TIME	24 HR TIME	measured FI	DATE	TIME	PRE / POST RATIO LOG
14	1.70	2.74	16.50	07/16/10	1639	1639	17.30	10/28/10	1351	0.021
15	1.90	3.06	13.20	07/16/10	1644	1644	13.80	10/28/10	1346	0.019
16	1.95	3.14	13.00	07/16/10	1649	1649	13.50	10/28/10	1343	0.016
17	2.97	4.78	4.21	07/16/10	1653	1653	13.98	10/28/10	1334	0.521
18	3.63	5.84	3.62	07/16/10	1659	1659	0.82	10/28/10	1315	-0.645
19	5.33	8.58	0.54	07/16/10	1710	1710	0.57	10/28/10	1327	0.023
20	6.60	10.62	0.73	07/16/10	1721	1721	0.44	10/28/10	1335	-0.220
21	7.08	11.39	0.42	07/16/10	1726	1726	0.44	10/28/10	1343	0.020
22	7.35	11.83	0.41	07/16/10	1731	1731	0.43	10/28/10	1413	0.021
23	7.59	12.21	0.38	07/16/10	1738	1738	0.36	10/28/10	1417	-0.023

Monitor point Maximum 35.2

PRE/POST Ratio
Logarithmic Mean

-0.025

Antilog Mean

0.945

EXHIBIT #10C
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGLAM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign: WABB - 1480
Azimuth (degrees True): 303.0

Type of Measurements:
Pre / Post Construction
of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION			
	miles	Kilometers	measured	FI	DATE	24 HR TIME	measured	FI	DATE	24 HR TIME
19	2.00	3.22	12.00	12.00	07/16/10	1624	11.80	11.80	10/27/10	1500
20	2.44	3.93	15.10	15.10	07/16/10	1616	14.20	14.20	10/27/10	1506
21	2.96	4.76	11.20	11.20	07/16/10	1611	11.10	11.10	10/27/10	1513
22	3.37	5.42	6.80	6.80	07/16/10	1605	6.51	6.51	10/27/10	1523
23	3.80	6.12	3.61	3.61	07/16/10	1600	3.48	3.48	10/27/10	1528
24	4.42	7.11	4.80	4.80	07/16/10	1550	4.46	4.46	10/27/10	1535
25	5.11	8.22	2.71	2.71	07/16/10	1541	2.81	2.81	10/27/10	1541
26	6.25	10.06	0.86	0.86	07/16/10	1532	0.83	0.83	10/27/10	1548
27	7.47	12.02	0.75	0.75	07/16/10	1526	0.76	0.76	10/27/10	1552
28	8.68	13.97	0.70	0.70	07/16/10	1510	0.71	0.71	10/27/10	1558

Monitor point Maximum 8.7

PRE/POST Ratio
Logarithmic Mean

-0.012 Antilog Mean 0.973

Note: Although monitor point value is above maximum for radial the overall impact of the WNGL construction on WABB is negligible

EXHIBIT #10D
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign:

WABB - 1480

Azimuth (degrees True):

322.5

Type of Measurements:

Pre / Post Construction
of WNGL Towers

POINT #	DISTANCE		PRE CONSTRUCTION				POST CONSTRUCTION			
	miles	Kilometers	measured FI	DATE	TIME	24 HR TIME	measured FI	DATE	TIME	PRE / POST RATIO LOG
14	1.70	2.74	6.10	07/13/10	1335	1500	19.10	10/27/10	1500	0.074
17	2.00	3.22	9.80	07/13/10	1347	1506	7.61	10/27/10	1506	-0.110
19	3.10	4.99	3.61	07/13/10	1353	1513	4.21	10/27/10	1513	0.067
20	3.56	5.73	2.65	07/13/10	1406	1523	2.75	10/27/10	1523	0.016
21	4.50	7.24	1.42	07/13/10	1417	1528	1.39	10/27/10	1528	-0.009
22	5.25	8.45	1.35	07/13/10	1425	1535	1.37	10/27/10	1535	0.006
24	7.69	12.38	0.35	07/13/10	1431	1541	0.38	10/27/10	1541	0.036
25	8.13	13.08	0.27	07/13/10	1435	1548	0.28	10/27/10	1548	0.016
26	8.68	13.97	0.27	07/13/10	1440	1548	0.28	10/27/10	1548	0.009
27	9.16	14.74	0.25	07/13/10	1443	1552	0.27	10/27/10	1552	0.033
28	9.43	15.18	0.24	07/13/10	1455	1558	0.26	10/27/10	1558	0.035

Monitor point Maximum 39.8

PRE/POST Ratio
Logarithmic Mean

0.016

Antilog Mean

1.037

EXHIBIT #10E
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

EXHIBIT #11

WNTM Partial Proof Measurements

Attached as Exhibits #11A through #11D are tabulations of field measurements conducted on WNTM's (710 kHz) directional antenna which demonstrates a lack of significant impact on the WNTM directional antenna system. While the WNGL personnel were not provided access to the transmitter site to log operating parameters of WNTM before and after the construction of the WNGL towers, no change is believed to have resulted from the WNGL construction. Mike Ginter conducted the field measurements and his affidavit is included with this application.

Field Intensity Measurements

Radio Station Call Sign: WNTM - 710
Azimuth (degrees True): 25.0

Type of Measurements:
Pre / Post Construction
of WNGL Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION			PRE / POST RATIO LOG
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME	
025A	0.78	1.26	13.60	08/02/10	1530	10.20	11/05/10	1443	-0.125
025B	0.85	1.37	5.49	08/02/10	1534	5.61	11/05/10	1448	0.009
025C	0.96	1.54	11.10	07/29/10	1538	10.30	11/05/10	1454	-0.032

PRE/POST Ratio
Logarithmic Mean

-0.049

Antilog Mean

0.893

EXHIBIT #11A
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign:

WNTM - 710

Azimuth (degrees True):

55.5

Type of Measurements:

Pre / Post Construction

of WNGI Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION			PRE / POST RATIO LOG
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME	
055A	1.55	2.50	13.41	08/02/10	1545	13.61	11/05/10	1525	0.006
055B	1.66	2.67	13.22	08/02/10	1549	12.20	11/05/10	1528	-0.035
055B	1.80	2.89	15.60	07/29/10	1554	15.80	11/05/10	1535	0.006

PRE/POST Ratio

Logarithmic Mean

-0.008

Antilog Mean

0.983

EXHIBIT #11B
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGI AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign:

WNTM - 710

Azimuth (degrees True):

83.0

Type of Measurements:

Pre / Post Construction

of WNGL Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION			PRE / POST RATIO LOG
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME	
083A	9.67	15.57	1.25	08/02/10	1635	1.26	11/05/10	1608	0.003
083B	9.77	15.72	1.18	08/02/10	1641	1.27	11/05/10	1612	0.032
083C	9.87	15.89	1.41	07/29/10	1647	1.29	11/05/10	1616	-0.039

PRE/POST Ratio

Logarithmic Mean

-0.001

Antilog Mean

0.998

EXHIBIT #11C
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 KHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign:

WNTM - 710

Azimuth (degrees True):

205.0

Type of Measurements:

Pre / Post Construction
of WNGI Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION			PRE / POST RATIO LOG
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME	
205A	2.31	3.71	152.00	08/02/10	1403	147.00	11/05/10	1402	-0.015
205B	2.94	4.73	82.10	08/02/10	1411	82.00	11/05/10	1407	-0.001
205C	3.49	5.62	56.20	07/29/10	1421	59.10	11/05/10	1414	0.022

PRE/POST Ratio

Logarithmic Mean

0.002

Antilog Mean

1.005

EXHIBIT #11D
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGI AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

Field Intensity Measurements

Radio Station Call Sign:

WNTM - 710

Azimuth (degrees True):

354.5

Type of Measurements:

Pre / Post Construction
of WNGI Towers

POINT #	DISTANCE miles	Kilometers	PRE CONSTRUCTION			POST CONSTRUCTION			PRE / POST RATIO LOG
			measured FI	DATE	24 HR TIME	measured FI	DATE	24 HR TIME	
34A	0.78	1.25	5.81	08/02/10	1450	5.91	11/05/10	1440	0.007
354A	1.40	2.25	4.68	08/02/10	1501	4.71	11/05/10	1502	0.003
354B	1.75	2.81	5.58	07/29/10	1513	5.11	11/05/10	1511	-0.038

354C

PRE/POST Ratio

Logarithmic Mean

-0.009

Antilog Mean

0.979

EXHIBIT #11E
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGI AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010



PERFORMANCE • RELIABILITY • EXPERIENCE

EXHIBIT #12A
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

November 10, 2010

Archangel Radio
2851 Old Shell Road
Fairhope, Alabama 36532

Subject: Archangel Radio Towers

CMG Job Number: 1558

Dear Mr. White:

Cowles, Murphy, Glover & Associates, LLP herewith submits this letter certifying the locations of the Archangel Radio towers.

Azimuth 0°00'0" (True North) Distance 232.50

Tower data as follows:

Horizontal Datum: NAD 83 established with RTK GPS referencing City of Mobile GPS control monument "03-42-07"

Vertical Datum: NAVD 88 established with RTK GPS referencing City of Mobile GPS control monument "03-42-07", Elevation 23.80 NAVD

Plane Coordinates refer to Alabama West Zone, NAD 83 (1992 adjustment)

TOWER No. 1
LAT N 30°-42'-26.151"
LON W 88°-03'-43.112"
N=257662.77
E=1791889.03
ELEVATION=32.3'

457 St. Michael Street • Mobile, Alabama 36602 • (251) 433-1611 • Fax (251) 433-1411

TOWER No. 2
LAT N 30°-42'-23.849"
LON W 88°-03'-43.098"
N=257430.27
E=1791889.03
ELEVATION=35.3'

I, Gary D. E. Cowles, a Registered Professional Engineer in the state of Alabama,
herewith certify the locations of the towers are true and correct.

If any additional information is required at this time, please advise.

Sincerely,

Gary D. E. Cowles, PE

Attachments: na

Affidavit

The included measurements in the WNGL license application:

WABB 4.3, 60, 244, 303 and 322.5 degree radials

WGOK 135, 175, 220 and 265 degree radials

WNTM 25, 55.5, 83, 205, 354.5 degree radials

Pre construction measurements were taken between June 30, 2010 and August 2, 2010.

Post construction measurements were taken between October 5, 2010 and November 5, 2010.

The above measurements were taken by me using a Potomac Instruments FIM 41, serial number 1329. This meter was most recently calibrated in October 2006. My credentials are a matter of record. These measurements are true and accurate to the best of my knowledge.



Michael B. Gliner

11/17/2010

EXHIBIT #12B
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410Hz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

EXHIBIT #13

Summary of Post-Construction Certified Array Geometry

The tower relative distances, provided in feet on the Certified Survey drawing, (see Exhibit #5A) are converted to electrical degrees at 1410 kHz and used, along with the survey tower azimuths relative to True North, to calculate the distance in electrical degrees from the location specified in the theoretical directional antenna pattern array geometry. Exhibit #13A is a tabulation showing those distances and other data that is relevant to their determination.

The "as built" tower displacements from their specified locations expressed in electrical degrees at carrier frequency, which corresponds to space phasing differences in the far-field radiation pattern of the array, are well below the +/- 3 degree operating phase range specified for antenna monitor parameters by the FCC Rules.

WNGL
1410

Mobile

AL

Tower	Specified Array Geometry			Post-Construction Certification*		Distance from Specified Base	
	Spacing (degrees)	Spacing (feet)	Azimuth (degrees true)	Spacing (feet)	Azimuth (degrees true)	(feet)	(degrees)
1	0.00	0.00	0.00	-	-	-	-
2	120.00	232.68	0.00	232.50	0.00	0.18	0.00

EXHIBIT #13A
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 KHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

EXHIBIT #14

Correction of Coordinates for the Center of the Array

Following the post construction survey of Exhibit #13, it was determined that a correction of the geographic coordinates of the center of the WNGL array is required. The correction of coordinates from North Latitude 30° 42' 25" and West Longitude 88° 03' 45" to North Latitude 30° 42' 24" and West Longitude 88° 03' 43" is less than 3 seconds of latitude and longitude; therefore, a correction of coordinates is allowed within the scope of this Form 302 license application. Included as Exhibit #14A are the calculations and NADCON conversion to establish this correction.

Output from NADCON for station WNGL Center of Array

North American Datum Conversion

NAD 83 to NAD 27

NADCON Program Version 2.11

=====

Transformation #: 1

Region: Conus

	Latitude	Longitude
NAD 27 datum values:	30 42 24.31759	88 03 43.10293
NAD 83 datum values:	30 42 25.00000	88 03 43.10000
NAD 27 - NAD 83 shift values:	-0.68241	0.00293 (secs.)
	-21.015	0.078 (meters)
Magnitude of total shift:		21.015 (meters)



[NGS HOME PAGE](#)

EXHIBIT #14A
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGL AM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

NAD '83
Tower 1

North Latitude		Seconds
Degrees	Minutes	
30	42	26.151

West Longitude		Seconds
Degrees	Minutes	
88	3	43.112

Tower 2

North Latitude		Seconds
Degrees	Minutes	
30	42	23.849

West Longitude		Seconds
Degrees	Minutes	
88	3	43.098

NAD '83 from Calculation
Center of Array

North Latitude		Seconds
Degrees	Minutes	
30	42	25.000

West Longitude		Seconds
Degrees	Minutes	
88	3	43.105

NAD '27 from NADCON

Center of Array		North Latitude		Seconds
Degrees	Minutes	Degrees	Minutes	
30	42			24.318

West Longitude		Seconds
Degrees	Minutes	
88	3	43.103

EXHIBIT #14B
APPLICATION FOR STATION LICENSE
ARCHANGEL COMMUNICATIONS, INC.
WNGLAM RADIO STATION
1410 kHz - 4.6/5.0 kW DAN
MOBILE, ALABAMA
December 2010

AFFIDAVIT AND QUALIFICATIONS OF CONSULTANT

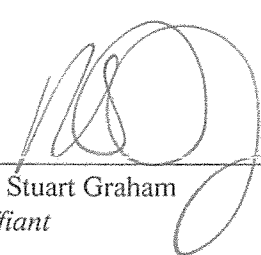
State of Georgia)
St. Simons Island) ss:
County of Glynn)

R. Stuart Graham, being duly sworn, deposes and says that he is an officer of Graham Brock, Inc. Graham Brock has been engaged by Archangel Communications, Inc., to prepare the attached Technical Exhibit.

His qualifications are a matter of record before the Federal Communications Commission. He has been active in Broadcast Engineering since 1979.

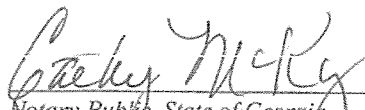
The attached report was either prepared by him or under his direction and all material and exhibits attached hereto are believed to be true and correct.

This the 21st day of December 2010.



R. Stuart Graham
Affiant

Sworn to and subscribed before me
this the 21st day of December 2010.



Notary Public, State of Georgia
My Commission Expires: March 18, 2011