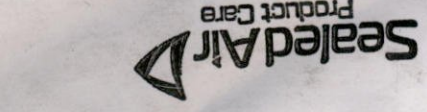

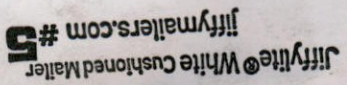

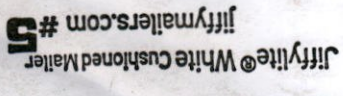

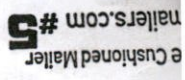


Tracking No: 1ZR460770210752833

DORTCH, MARLENE

TW-B204F

Phone: 418-1449

Received On: 02-04-2021 10:21am

MOSKOWITZ
(301) 251-1353
10845 TUCKAHOE WAY
NORTH POTOMAC MD 20878

2 LBS 1 OF 1
SHP WT: 2 LBS
DWT: 16,13,4
DATE: 03 FEB 2021

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MD 207 9-13

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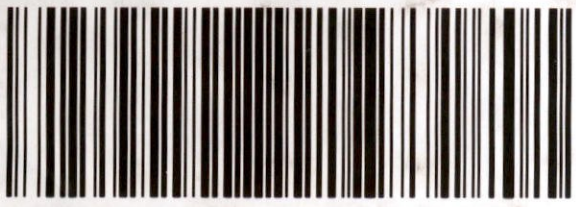

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ALLAN G. MOSKOWITZ, ESQ.

February 3, 2021

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: FILING OF MOMENT METHOD MODELING PROOF OF PERFORMANCE

Radio Station WPOM (AM)
Facility ID No. 73892
Riviera Beach, FL
Caribbean Media Group, Inc.

Dear Ms. Dortch:

On behalf of Caribbean Media Group, Inc., licensee of Radio Station WPOM(AM), Riviera Beach, Florida, we are herewith filing an original and 2 copies of an application on FCC Form 302-AM for a license following a Moment Method Modeling Proof of Performance.

Attached is the FCC's "Online Payment Information" indicating that the license has paid $1, 560.00 as a filing fee on February 3, 2021 pursuant to the FCC's Fee schedule.

I am also enclosing a copy of this cover letter which I request be "stamped' and returned to me in the attached envelope.

Should any questions arise with respect to this matter, please contact the undersigned counsel.

Respectfully submitted,

By _____
Allan G. Moskowitz

Cc: Son Nguyen, Media Bureau

10845 TUCKAHOE WAY | NORTH POTOMAC, MD 20878 | T 301.908.4165 | F 301.251.1353 | AMOSKOWITZ@AMOSKOWITZLAW.COM

MEMBER OF THE DC BAR. NOT LICENSED TO PRACTICE LAW IN THE STATE OF MARYLAND

Federal Communications Commission

Commission Registration System (CORES)

FCC Registration

Logged In As: 0024440851 | Logout

Online Payment Confirmation

Print

Online Payment Information

Total Amount	$1,560.00
Payer FRN	0024440851
Payer Name	Caribbean Media Group, Inc.
Remittance ID	3519702
Treasury Tracking ID	26R61O2A

Thank you for your payment!

Customer Service

Help | Frequently Asked Questions | Privacy Statement | FCC Home Page

For assistance, please submit a help request at https://www.fcc.gov/wireless/available-support-services or call 877-480-3201 (Mon.-Fri. 8 a.m.-6 p.m. ET).

Federal Communications Commission
Washington, D. C. 20554

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

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY

FILE NO.

SECTION I - APPLICANT FEE INFORMATION

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

Caribbean Media Group, Inc.

MAILING ADDRESS (Line 1) (Maximum 35 characters)
1920 Palm Beach Lakes Blvd

MAILING ADDRESS (Line 2) (Maximum 35 characters)
Suite 217

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
West Palm Beach	FL	33409

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
562-543-1239	WPOM	73892

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

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

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

C. If Yes, provide the following information:

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

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M M R	0 0 0 1	$725.00	

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	$835.00	

	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	$ 1,560.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Caribbean Media Group, Inc.		
MAILING ADDRESS 1920 Palm Beach Lakes Blvd, Suite 217		
CITY West Palm Beach	STATE FL	ZIP CODE 33409

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
WPOM	Riviera Beach, FL	NA - Moment Proof		NA - Moment Proof

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. NA

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. NA

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

☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No.

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

☑ Yes ☐ No

☐ Does not apply

If No, explain in an Exhibit.

Exhibit No.

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

☐ Yes ☑ No

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

Exhibit No.

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

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

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

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

CERTIFICATION

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

☑ Yes ☐ No

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

Name	Signature	
Carline Clerge		
Title	**Date**	**Telephone Number**
President	2/1/2021	561-543-1239

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

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

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

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

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

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
Caribbean Media Group, 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
WPOM	N/A	1600	Unlimited	4.7	5.0

2. Station location	
State	City or Town
Florida	Riviera Beach

3. Transmitter location			
State	County	City or Town	Street address (or other identification)
FL	Palm Beach	West Palm Beach	4773 Haverhill Rd.

4. Main studio location			
State	County	City or Town	Street address (or other identification)
FL	Palm Beach	West Palm Beach	1920 Palm Beach Lakes Blvd., #217

5. Remote control point location (specify only if authorized directional antenna)			
State	County	City or Town	Street address (or other identification)
FL	Palm Beach	West Palm Beach	1920 Palm Beach Lakes Blvd., #217

6. Has type-approved stereo generating equipment been installed? ☐ Yes ☑ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? ☑ Yes ☐ No ☐ Not Applicable

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

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
10.1	10.4
Measured antenna or common point resistance (in ohms) at operating frequency	**Measured antenna or common point reactance (in ohms) at operating frequency**
Night 50.0 Day 50.0	Night -6.4 Day -6.4

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	0.0	1.000	1.000		
2(SW)	164.2	95.3	.510	.822		
3(N)	-55.7	-0.1	.515	.301		
4(NW)	-146.2	17.9	.182	.322		
5(E)	127.2	45.2	.394	.890		

Manufacturer and type of antenna monitor: Potomac Instruments 1901-5

SECTION III - Page 2

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

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
Guyed Tower	84.8 #1,#2,#3,#4 41.6 #5	86.2 #1,#2,#3,#4 43.3 #5	87.2 #1,#2,#3,#4 43.3 #5	Exhibit No. N/A

Excitation ☑ Series ☐ Shunt

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

North Latitude	West Longitude
26 ° 44 ' 55 "	80 ° 07 ' 58 "

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. ENG.

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

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

N/A

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

New Adjustment

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

Name (Please Print or Type)	Signature (check appropriate box below)
Kurt Gorman	
Address (include ZIP Code)	Date
Phasetek Inc. 550 California Rd., Unit 11 Quakertown, PA 18951	January 30, 2021
	Telephone No. (Include Area Code) 215-536-6648

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☑ Technical Consultant

☐ Other (specify)

ENGINEERING STATEMENT CONCERNING

APPLICATION FOR LICENSE INFORMATION EMPLOYING MOMENT METHOD MODELING

WPOM, 1600 KHZ, DA-2

RIVIERA BEACH, FLORIDA

JANUARY, 2021

PHASETEK INC.

ENGINEERING STATEMENT CONCERNING APPLICATION FOR LICENSE INFORMATION EMPLOYING MOMENT METHOD MODELING WPOM, 1600 KHZ, DA-2 RIVIERA BEACH, FLORIDA JANUARY, 2021

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PHASETEK INC.

ENGINEERING STATEMENT CONCERNING APPLICATION FOR LICENSE INFORMATION EMPLOYING MOMENT METHOD MODELING WPOM, 1600 KHZ, DA-2 RIVIERA BEACH, FLORIDA JANUARY, 2021

SUMMARY

Adjustment of the Antenna System and a Proof of Performance employing Moment Method Modeling were performed on Radio Station WPOM, 1600 KHz, Riviera Beach, Florida, after installation of new sampling loops for all towers. This report was prepared on behalf of Caribbean Media Group, Inc., licensee of Radio Station WPOM.

SITE MODIFICATIONS

The WPOM Transmitter site is that as currently licensed. The sampling system has been changed due to replacement of the sampling loops on all towers. The new loops are located on each tower at the location of minimum current for minimum radiated field. All Towers remain unchanged and are identical in face width and geometry. There are no changes to the presently licensed standard radiation patterns, therefore, a site survey is not included. A License Application employing Moment Method Modeling as set forth in Section 73.151(C) has been done to license Radio Station WPOM under the new rules.

REFERENCE POINTS

Reference Points were measured at pattern minima and maxima for the Directional modes of operation. These Points and their measured field intensity are shown in Figure 13.

CALCULATION OF SAMPLING LOOP LOCATIONS

All five (5) towers are identical in face width and cross section geometry. Towers 1-4 are physically 163.0° and tower 5 is 80.0°. Figure 14 shows calculation of currents for the two heights based upon minimum radiation, which is the location of the sampling loops. These locations are 1/3 the physical height of the towers, which is 93 ft. above the base for towers 1-4 and 45 ft. above the base for tower 5.

PHASETEK INC.

ENGINEERING STATEMENT CONCERNING APPLICATION FOR LICENSE INFORMATION EMPLOYING MOMENT METHOD MODELING WPOM, 1600 KHZ, DA-2 RIVIERA BEACH, FLORIDA JANUARY, 2021

METHOD OF MOMENTS DETAIL

All Moment Method Modeling was done with Expert MININEC Broadcast Professional, Version 23. One wire was used to represent each tower. Towers were driven individually to verify the Model compared to measured impedance data. Once the Model was verified, both the Day and Night Directional Antenna Systems were computed. For Directional modes, the complex voltage values for sources located at ground level were computed. These sources produce current moment sums for each Tower that, when normalized, equate to the Theoretical Field Parameters for each respective Tower.

MEASURING EQUIPMENT AND PERSONNEL

All Tower Resistance and Reactance measurements were made with a HP8753ES Network Analyzer and Tunwall directional coupler. Before use, tests of known impedances were made to verify operation. All Field Intensity Measurements were made with a Potomac Instruments Field Intensity Meter, model PI 4100, Serial Number 249, calibrated on January 21, 2016. The meter was calibrated by Potomac Instruments, Frederick, Maryland. The meter was compared to a Potomac Instruments PI 4100, Serial Number 134, calibrated on June 19, 2019, and agreed. All measurements were taken by Phasetek Inc. personnel supervised by Kurt Gorman of Phasetek Inc.

CONCLUSION

It is believed that the WPOM Antenna System has been constructed and adjusted in accordance with all applicable Commission rules and regulations. The foregoing was prepared on behalf of Caribbean Media Group, Inc., under the immediate supervision of Kurt Gorman, Phasetek Inc., Quakertown, Pennsylvania, whose qualifications are a matter of record with the Federal Communications Commission. The statements herein are true and correct of his knowledge, except such statements made on information and belief, and as to these statements he believes them to be true and correct.

PHASETEK INC.

ENGINEERING STATEMENT CONCERNING
APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

Kurt Gorman, President
Phasetek Inc.
Quakertown, Pennsylvania

FIGURE 1

ANTENNA SYSTEM AS ADJUSTED

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

ANTENNA SYSTEM DESCRIPTION

1. The Antenna System consists of five (5), vertical steel transmitting Towers. All Towers are uniform cross section and guyed. Towers 1-4 stand 84.8M (163.0°) above their Base Insulators. Tower 5 stands 41.6M (80.0°) above the base insulator. The Towers are arranged with Tower 1 as a reference; Tower 2 is spaced 97.36° on a bearing of 278.39°T. Tower 3 is spaced 245.74° on a bearing of 350.48°T. Tower 4 is spaced 273.09° on a bearing of 320.35°T. Tower 5 is spaced 190.35° on a bearing of 34.33°T. Towers 1-4 have aviation obstruction lighting. The feeds for the lighting are isolated at the base with cokes. All towers have a 12" by 48" rigid, fixed mount sampling loop. The feed for these loops is isolated at the base with an isolation inductor.

2. The Ground System for each Tower remains as currently licensed. This consists of (120) equally spaced, buried, copper radials about the base of each tower, each 47 M 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. In addition, (120) copper radials, 15.2 M in length, are interspersed at each tower base. Copper strap connects all Towers to the main Transmitter grounding point.

3. The Sampling System consists of five (5), Phasetek Inc. model P600-155-2, 12" x 48" sampling loops. All loops are mounted on the towers with an isolation inductor at each tower base. These loops are connected to a Potomac Instruments 1901-5 Antenna Monitor via five (5) equal lengths of Andrew, LDF2-50, 3/8" phase stabilized foam coaxial cable (tower) and Cablewave FCC-38-50J 3/8" phase stabilized foam coaxial cable (tower to building).

FIGURE 1
ANTENNA SYSTEM AS ADJUSTED

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
CONTINUED
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

4. Tower registration numbers:
   Tower 1: 1052241
   Tower 2: 1052242
   Tower 3: 1052243
   Tower 4: 1052244
   Tower 5: 1052245

ANTENNA SYSTEM DESCRIPTION – Continued

DIRECTIONAL OPERATION (DAY)

COMMON POINT

Impedance = 50.0 - j 6.4 Ohms
Current = 10.4 Amperes
Power = 5,400 Watts

DIRECTIONAL OPERATION (NIGHT)

COMMON POINT

Impedance = 50.0 - j 6.4 Ohms
Current = 10.1 Amperes
Power = 5,076 Watts

Directional Antenna Monitor indications are within ±5% and ±3° of the modeled TCT values.

FIGURE 2
WPOM SAMPLING SYSTEM DESCRIPTION/MEASUREMENTS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

SAMPLING SYSTEM DESCRIPTION

The Sampling System consists of Phasetek Inc. model P600-155-2 12" x 48" loops mounted on each Tower. The sampling devices are connected to the Antenna Monitor with equal lengths of Andrew LDF2-50/Cablewave FCC-38-50J. The Antenna Monitor is a Potomac Instruments Model 1901-5, Serial Number 395.

SAMPLE LINE MEASUREMENTS

Impedance measurements were made of the Antenna Sampling Lines using an HP8753ES Network Analyzer and Tunwall directional coupler. Measurements were done with the lines open circuited and then connected to the loops.

The table below shows the frequencies above and below the carrier frequency where resonance, defined as zero reactance corresponding with low resistance, was found. Frequencies of resonance occur at odd multiples of 90 degrees electrical length, the Sample Line length at the resonant frequency above the carrier frequency, which is the closest one to the carrier frequency, was found to be 450 electrical degrees. The electrical length at carrier frequency appearing in the table below was calculated by ratioing the frequencies.

SAMPLE LINE MEASUREMENTS

	Resonant Frequency (KHz) below 1600 KHz	Resonant Frequency (KHz) above 1600 KHz	Calculated Electrical Length (deg) at 1600 KHz	Measured Impedance (ohms) Connected to loop @ 1600 KHz
Tower 1	1114.4	1853.6	388.4	9.7 +j 48.1
Tower 2	1113.7	1855.5	388.0	8.6 +j 47.7
Tower 3	1110.5	1852.1	388.7	9.1 +j 48.0
Tower 4	1105.1	1854.5	388.2	9.7 +j 52.8
Tower 5	1113.1	1852.9	388.6	10.4 +j 48.7

FIGURE 2
WPOM SAMPLING SYSTEM DESCRIPTION/MEASUREMENTS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
CONTINUED
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

SAMPLE LINE MEASUREMENTS (CONTINUED)

To determine the characteristic impedance values of the Sample Lines, open-circuited 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 R1 +j X1 and R2 +j X2 are the measured impedances at the +45 and -45 degree offset frequencies, respectively:

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

Tower	+ 45 Degree Offset Frequency (kHz)	+ 45 Degree Measured Impedance (Ohms)	- 45 Degree Offset Frequency (kHz)	- 45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
1	2039.0	17.2 +j 47.1	1668.2	14.8 –j 48.0	50.19
2	2041.1	10.7 +j 48.6	1670.0	8.7 –j 48.7	49.62
3	2037.3	17.9 +j 46.2	1666.9	16.0 –j 46.7	49.46
4	2040.0	10.9 +j 50.6	1669.1	8.0 –j 48.6	50.49
5	2038.2	17.6 +j 47.2	1667.6	13.7 –j 48.3	50.29

FIGURE 2
WPOM SAMPLING SYSTEM DESCRIPTION/MEASUREMENTS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
CONTINUED
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

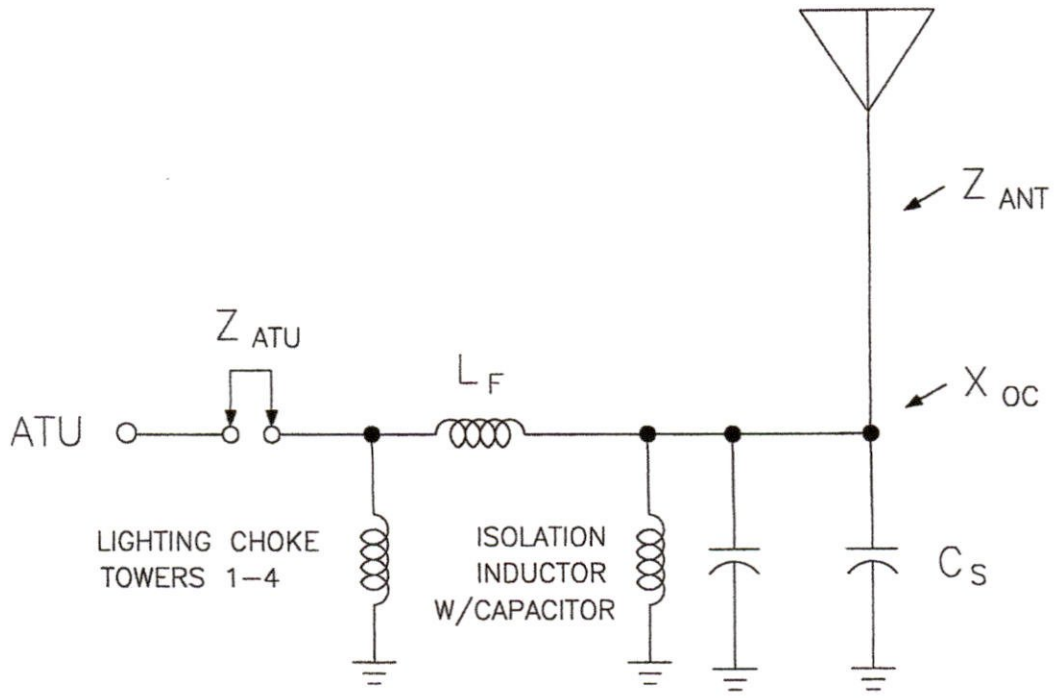
ANTENNA MONITOR MEASUREMENT

Measurement of the Potomac Instruments Model 1901-5 Antenna Monitor was performed to verify calibration. A single RF Voltage was applied to the Reference Input (Tower #1) and each other Input by use of a "T" divider and equal electrical length coaxial cables. This yields the following:

Tower	Ratio	Phase
1	1.000	0.0°
2	1.006	-0.1°
3	1.006	-0.1°
4	1.005	0.0°
5	1.006	0.0°

The above is within the manufacturer's rating of ± 1.0% and ± 1.0°.

FIGURE 3
WPOM TOWER IMPEDANCE MEASUREMENTS COMPARED TO METHOD OF MOMENTS MODEL



TOWER	Specified Cs (pf)	Measured L_F (µH)	Measured X_F (Ω)	Modeled Z_{ANT} (Ω)	Modeled Z_{ATU} (Ω)	Measured Z_{ATU} (Ω)
1	14	2.49	+j25.0	299.8 –j 445.9	313.8 –j 423.1	309.1 –j 424.5
2	14	2.49	+j25.0	330.5 –j 477.0	347.3 –j 454.4	344.0 –j 459.0
3	14	2.49	+j25.0	317.1 –j 451.6	332.2 –j 428.3	337.0 –j 421.0
4	14	2.49	+j25.0	346.1 –j 501.4	364.9 –j 479.4	362.0 –j 465.4
5	14	3.68	+j37.0	30.1 –j 12.7	30.0 +j 24.2	28.8 +j 25.6

Tower	Calculated X_{OC} (Ω)
1	+j 16,050.9
2	+j 16,050.9
3	+j 16,050.9
4	+j 16,050.9
5	-j 7,105.1

FIGURE 4
WPOM MOMENT MODEL PARAMETERS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

Tower #	Wire #	# of Segments	Base Node	Loop Node
1	1	24	1	9
2	2	24	25	33
3	3	24	49	57
4	4	24	73	81
5	5	12	97	101

Tower #	Physical Height Degrees	Modeled Height Degrees	Modeled Radius Meters	% of Equivalent Radius
1	163.0	177.0	.2911	100.0
2	163.0	179.0	.2911	100.0
3	163.0	182.0	.2911	100.0
4	163.0	182.0	.2911	100.0
5	80.0	82.5	.2911	100.0

Towers are uniform cross section, guyed with Base Insulator. All towers are three (3) sided with a 24" face width.

Base Insulators for towers 1-4 were manufactured by Utility and the base insulator for tower 5 was manufactured by Decca-Austin. All base insulators have an assumed capacity of 14pf (-j7,105.1 ohms @ 1600 kHz). All towers have a sampling line isolation inductor with resonating capacitor. These measure greater than 100,000 ohms at 1600 kHz, and are not included in the model.

Towers 1-4 have a tower lighting choke. These measure +j4,900.0 ohms @ 1600 kHz.

FIGURE 5
WPOM MOMENT SUMMARY FOR INDIVIDUAL TOWERS

WPOM TOWER 1 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	245,741.	350.483	0	.2911	24
		245,741.	350.483	182.		
4	none	273.09	320.347	0	.2911	24
		273.09	320.347	182.		
5	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 5
current nodes = 108

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	5	6.875	3	7.58333
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.6	0	1	.0190972	.0210648

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	25	0	16,050.9	0	0	0
2	49	0	16,050.9	0	0	0
3	73	0	16,050.9	0	0	0
4	97	0	-7,105.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.6	299.75	-445.91	537.3	303.9	19.377	-.8973	-7.2894

FIGURE 5
WPOM MOMENT SUMMARY FOR INDIVIDUAL TOWERS

WPOM TOWER 2 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	245,741.	350.483	0	.2911	24
		245,741.	350.483	182.		
4	none	273.09	320.347	0	.2911	24
		273.09	320.347	182.		
5	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 5
current nodes = 108

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	5	6.875	3	7.58333
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.6	0	1	.0190972	.0210648

Sources

source	node	sector	magnitude	phase	type
1	25	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	16,050.9	0	0	0
2	49	0	16,050.9	0	0	0
3	73	0	16,050.9	0	0	0
4	97	0	-7,105.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 25, sector 1							
1.6	330.46	-476.99	580.28	304.7	20.482	-.84884	-7.5071

FIGURE 5
WPOM MOMENT SUMMARY FOR INDIVIDUAL TOWERS

WPOM TOWER 3 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	245,741.	350.483	0	.2911	24
		245,741.	350.483	182.		
4	none	273.09	320.347	0	.2911	24
		273.09	320.347	182.		
5	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 5
current nodes = 108

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	5	6.875	3	7.58333
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.6	0	1	.0190972	.0210648

Sources

source	node	sector	magnitude	phase	type
1	49	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	16,050.9	0	0	0
2	25	0	16,050.9	0	0	0
3	73	0	16,050.9	0	0	0
4	97	0	-7,105.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 49, sector 1							
1.6	317.1	-451.59	551.8	305.1	19.31	-.90041	-7.2759

FIGURE 5
WPOM MOMENT SUMMARY FOR INDIVIDUAL TOWERS

WPOM TOWER 4 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	245,741.	350.483	0	.2911	24
		245,741.	350.483	182.		
4	none	273.09	320.347	0	.2911	24
		273.09	320.347	182.		
5	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 5
current nodes = 108

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	5	6.875	3	7.58333
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.6	0	1	.0190972	.0210648

Sources

source	node	sector	magnitude	phase	type
1	73	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	16,050.9	0	0	0
2	25	0	16,050.9	0	0	0
3	49	0	16,050.9	0	0	0
4	97	0	-7,105.1	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 73, sector 1							
1.6	346.08	-501.44	609.27	304.6	21.551	-.80667	-7.708

FIGURE 5
WPOM MOMENT SUMMARY FOR INDIVIDUAL TOWERS

WPOM TOWER 5 (OTHERS OPEN)

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	245,741.	350.483	0	.2911	24
		245,741.	350.483	182.		
4	none	273.09	320.347	0	.2911	24
		273.09	320.347	182.		
5	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 5
current nodes = 108

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	5	6.875	3	7.58333
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.6	0	1	.0190972	.0210648

Sources

source	node	sector	magnitude	phase	type
1	97	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	16,050.9	0	0	0
2	25	0	16,050.9	0	0	0
3	49	0	16,050.9	0	0	0
4	73	0	16,050.9	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 97, sector 1							
1.6	30.097	-12.741	32.683	337.1	1.8224	-10.711	-.38533

FIGURE 6
WPOM MOMENT MODEL ARRAY SYNTHESIS
(DIRECTIONAL – DAY)

WPOM DAY

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.6 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.834	96.5
3	.31	-.1
4	.336	19.1
5	.419	46.4

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	1,969.46	71.6	3.74238	125.
25	1,349.54	182.	1.1371	254.8
49	562.942	73.8	1.02034	128.8
73	552.06	107.1	.603123	190.3
97	126.053	297.2	5.52481	45.4

Sum of square of source currents = 94.4537
Total power = 5,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00128173	.00129762
Y(1, 2)	.000613854	-.000214045
Y(1, 3)	-5.7338E-09	-3.7088E-07
Y(1, 4)	-.000360777	-.000224433
Y(1, 5)	.00222827	.00012224
Y(2, 1)	.000613852	-.000214051
Y(2, 2)	.00099238	.00132238
Y(2, 3)	3.7076E-07	-4.2206E-07
Y(2, 4)	-.000328783	-.000447235
Y(2, 5)	.000940523	-.00131043
Y(3, 1)	-5.738E-09	-3.7088E-07
Y(3, 2)	3.7076E-07	-4.2205E-07
Y(3, 3)	.00104142	.00148313
Y(3, 4)	-3.4632E-07	3.8749E-07
Y(3, 5)	-1.3365E-06	1.8398E-06
Y(4, 1)	-.000360778	-.000224432
Y(4, 2)	-.000328784	-.000447233
Y(4, 3)	-3.4632E-07	3.8749E-07
Y(4, 4)	.000847826	.00156842
Y(4, 5)	-.000148172	-.0021174
Y(5, 1)	.00222832	.000122274
Y(5, 2)	.000940564	-.00131043
Y(5, 3)	-1.3365E-06	1.8398E-06
Y(5, 4)	-.000148118	-.00211744
Y(5, 5)	.0267399	.0121996

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	301.58	-445.063
Z(1, 2)	90.1149	148.751
Z(1, 3)	.106007	-.00126391
Z(1, 4)	7.46093	-47.5102
Z(1, 5)	-14.6951	41.9254
Z(2, 1)	90.1135	148.752
Z(2, 2)	330.195	-476.473

Z(2, 3)	.140601	.0347312
Z(2, 4)	133.073	-108.431
Z(2, 5)	23.1338	19.516
Z(3, 1)	.106006	-.00126407
Z(3, 2)	.140601	.0347305
Z(3, 3)	317.097	-451.591
Z(3, 4)	-.113759	-.103111
Z(3, 5)	-.0375645	-.0315412
Z(4, 1)	7.46053	-47.5104
Z(4, 2)	133.074	-108.431
Z(4, 3)	-.113759	-.103111
Z(4, 4)	343.971	-501.437
Z(4, 5)	48.8948	16.4135
Z(5, 1)	-14.6943	41.9246
Z(5, 2)	23.1339	19.5153
Z(5, 3)	-.0375641	-.0315412
Z(5, 4)	48.8943	16.4119
Z(5, 5)	30.1812	-12.7862

FIGURE 7
WPOM MOMENT MODEL SUMMARY FOR DIRECTIONAL DAY MODE

WPOM DAY

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	245,741.	350.483	0	.2911	24
		245,741.	350.483	182.		
4	none	273.09	320.347	0	.2911	24
		273.09	320.347	182.		
5	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 5
current nodes = 108

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	5	6.875	3	7.58333
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.6	0	1	.0190972	.0210648

Sources

source	node	sector	magnitude	phase	type
1	1	1	2,785.23	71.6	voltage
2	25	1	1,908.54	182.	voltage
3	49	1	796.12	73.8	voltage
4	73	1	780.731	107.1	voltage
5	97	1	178.265	297.2	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.6	313.76	-422.5	526.26	306.6	17.757	-.97937	-6.9489
source = 2; node 25, sector 1							
1.6	350.87	-1,133.8	1,186.8	287.2	80.42	-.21603	-13.14
source = 3; node 49, sector 1							
1.6	317.19	-451.42	551.72	305.1	19.299	-.90095	-7.2735
source = 4; node 73, sector 1							
1.6	107.93	-908.95	915.33	276.8	155.71	-.11157	-15.958
source = 5; node 97, sector 1							
1.6	-7.1251	-21.675	22.816	251.8	****	****	****

CURRENT rms
Frequency = 1.6 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	3.74239	125.	-2.14645	3.06566
2	0	0	7.375	2.52026	99.7	-.424696	2.48422
3	0	0	14.75	2.19884	71.5	.698725	2.08487
4	0	0	22.125	2.40295	45.5	1.6828	1.71532
5	0	0	29.5	2.90672	28.	2.56728	1.36312
6	0	0	36.875	3.51696	16.9	3.36421	1.02523
7	0	0	44.25	4.13494	9.8	4.07483	.702483
8	0	0	51.625	4.71313	4.8	4.69636	.397212
9	0	0	59.	5.22582	1.2	5.22462	.112389
10	0	0	66.375	5.65713	358.5	5.65517	-.148825
11	0	0	73.75	5.99632	356.3	5.98406	-.383342
12	0	0	81.125	6.23594	354.6	6.20812	-.58831
13	0	0	88.5	6.37098	353.1	6.32534	-.76123
14	0	0	95.875	6.39847	351.9	6.33485	-.900042
15	0	0	103.25	6.31731	350.9	6.23715	-1.00317
16	0	0	110.625	6.12809	349.9	6.03403	-1.06955
17	0	0	118.	5.83297	349.1	5.72856	-1.09868
18	0	0	125.375	5.43554	348.4	5.32502	-1.09053
19	0	0	132.75	4.94055	347.8	4.82864	-1.04559
20	0	0	140.125	4.35364	347.2	4.2454	-.96475
21	0	0	147.5	3.68068	346.7	3.5814	-.849109
22	0	0	154.875	2.92675	346.2	2.84187	-.699725
23	0	0	162.25	2.09329	345.7	2.02848	-.516829
24	0	0	169.625	1.17139	345.3	1.13287	-.297957
END	0	0	177.	0	0	0	0
GND	14.2109	96.3173	0	1.1371	254.8	-.298858	-1.09713
26	14.2109	96.3173	7.45833	.375068	155.8	-.342005	.153976
27	14.2109	96.3173	14.9167	1.04132	110.9	-.37106	.972966
28	14.2109	96.3173	22.375	1.7371	103.2	-.397146	1.69109
29	14.2109	96.3173	29.8333	2.37441	100.2	-.420919	2.33681
30	14.2109	96.3173	37.2917	2.95169	98.6	-.442256	2.91837
31	14.2109	96.3173	44.75	3.46691	97.6	-.460706	3.43616
32	14.2109	96.3173	52.2083	3.91667	97.	-.475693	3.88768
33	14.2109	96.3173	59.6667	4.297	96.5	-.486618	4.26936
34	14.2109	96.3173	67.125	4.60402	96.1	-.492916	4.57756
35	14.2109	96.3173	74.5833	4.83429	95.9	-.494101	4.80898
36	14.2109	96.3173	82.0417	4.98513	95.6	-.489798	4.96101
37	14.2109	96.3173	89.5	5.05471	95.4	-.479767	5.03189
38	14.2109	96.3173	96.9583	5.04225	95.3	-.463913	5.02086
39	14.2109	96.3173	104.417	4.94798	95.1	-.442297	4.92817
40	14.2109	96.3173	111.875	4.77322	95.	-.415132	4.75514
41	14.2109	96.3173	119.333	4.52033	94.9	-.382781	4.50409
42	14.2109	96.3173	126.792	4.19259	94.7	-.345738	4.17831
43	14.2109	96.3173	134.25	3.79413	94.6	-.304613	3.78188
44	14.2109	96.3173	141.708	3.32961	94.5	-.260091	3.31944
45	14.2109	96.3173	149.167	2.80389	94.4	-.2129	2.7958
46	14.2109	96.3173	156.625	2.22109	94.2	-.163728	2.21505
47	14.2109	96.3173	164.083	1.58264	94.1	-.113083	1.57859
48	14.2109	96.3173	171.542	.882132	94.	-.0609526	.880024
END	14.2109	96.3173	179.	0	0	0	0
GND	242,359.	40,630.9	0	1.02035	128.8	-.638686	.79573
50	242,359.	40,630.9	7.58333	.660016	101.5	-.1317	.646743
51	242,359.	40,630.9	15.1667	.580077	69.6	.202628	.543535
52	242,359.	40,630.9	22.75	.66904	42.	.497158	.447715
53	242,359.	40,630.9	30.3333	.84228	25.	.763288	.356128
54	242,359.	40,630.9	37.9167	1.03938	14.9	1.00422	.268054
55	242,359.	40,630.9	45.5	1.23376	8.6	1.22	.18374
56	242,359.	40,630.9	53.0833	1.41332	4.2	1.40951	.103818
57	242,359.	40,630.9	60.6667	1.57148	1.1	1.57122	.029078
58	242,359.	40,630.9	68.25	1.70405	358.7	1.70359	-.0396375
59	242,359.	40,630.9	75.8333	1.80806	356.8	1.80521	-.101504
60	242,359.	40,630.9	83.4167	1.88146	355.3	1.875	-.155753

61	242,359.	40,630.9	91.	1.92281	354.	1.9122	-.201701
62	242,359.	40,630.9	98.5833	1.93126	352.9	1.91645	-.238773
63	242,359.	40,630.9	106.167	1.90657	352.	1.88785	-.266511
64	242,359.	40,630.9	113.75	1.84895	351.1	1.82691	-.284592
65	242,359.	40,630.9	121.333	1.75913	350.4	1.73459	-.292825
66	242,359.	40,630.9	128.917	1.63827	349.8	1.61219	-.291152
67	242,359.	40,630.9	136.5	1.48793	349.2	1.46142	-.279643
68	242,359.	40,630.9	144.083	1.3099	348.6	1.28415	-.25847
69	242,359.	40,630.9	151.667	1.10613	348.1	1.08241	-.227875
70	242,359.	40,630.9	159.25	.878302	347.6	.857927	-.188086
71	242,359.	40,630.9	166.833	.627059	347.2	.611433	-.139116
72	242,359.	40,630.9	174.417	.349974	346.7	.340647	-.0802596
END	242,359.	40,630.9	182.	0	0	0	0
GND	210.258	174.269	0	.603126	190.3	-.593386	-.107956
74	210.258	174.269	7.58333	.107544	155.8	-.098102	.0440641
75	210.258	174.269	15.1667	.271189	32.1	.229657	.144225
76	210.258	174.269	22.75	.569104	24.1	.519505	.232366
77	210.258	174.269	30.3333	.84236	21.7	.782493	.311891
78	210.258	174.269	37.9167	1.09133	20.6	1.02164	.38374
79	210.258	174.269	45.5	1.31544	19.9	1.23684	.4479
80	210.258	174.269	53.0833	1.51325	19.5	1.42685	.504005
81	210.258	174.269	60.6667	1.68297	19.1	1.59002	.551566
82	210.258	174.269	68.25	1.82278	18.9	1.72462	.590077
83	210.258	174.269	75.8333	1.93102	18.7	1.82909	.619081
84	210.258	174.269	83.4167	2.00634	18.5	1.90213	.638198
85	210.258	174.269	91.	2.04772	18.4	1.94277	.647161
86	210.258	174.269	98.5833	2.05458	18.3	1.95044	.645816
87	210.258	174.269	106.167	2.02677	18.2	1.92501	.634146
88	210.258	174.269	113.75	1.96459	18.2	1.86675	.612261
89	210.258	174.269	121.333	1.86878	18.1	1.77637	.580403
90	210.258	174.269	128.917	1.7405	18.	1.65496	.538933
91	210.258	174.269	136.5	1.58127	18.	1.50398	.488317
92	210.258	174.269	144.083	1.39284	17.9	1.32509	.429098
93	210.258	174.269	151.667	1.17708	17.9	1.12008	.361841
94	210.258	174.269	159.25	.935571	17.9	.890454	.287027
95	210.258	174.269	166.833	.668772	17.8	.636644	.204793
96	210.258	174.269	174.417	.373815	17.8	.355923	.114265
END	210.258	174.269	182.	0	0	0	0
GND	157.193	-107.351	0	5.52482	45.4	3.87767	3.9354
98	157.193	-107.351	6.875	5.38162	45.8	3.75308	3.85697
99	157.193	-107.351	13.75	5.20216	46.	3.61351	3.74232
100	157.193	-107.351	20.625	4.95827	46.2	3.43234	3.57819
101	157.193	-107.351	27.5	4.64939	46.4	3.20858	3.36479
102	157.193	-107.351	34.375	4.27734	46.5	2.94331	3.10365
103	157.193	-107.351	41.25	3.84519	46.7	2.63864	2.79697
104	157.193	-107.351	48.125	3.35659	46.8	2.29717	2.44739
105	157.193	-107.351	55.	2.81522	47.	1.92157	2.05744
106	157.193	-107.351	61.875	2.22395	47.1	1.51396	1.62908
107	157.193	-107.351	68.75	1.58267	47.2	1.0745	1.16202
108	157.193	-107.351	75.625	.883497	47.4	.598133	.650235
END	157.193	-107.351	82.5	0	0	0	0

FIGURE 8
WPOM MOMENT MODEL ARRAY SYNTHESIS
(DIRECTIONAL – NIGHT)

WPOM NIGHT

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.6 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.526	165.1
3	.53	-56.
4	.182	-146.1
5	.185	128.2

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	2,028.22	75.	3.48235	132.8
25	1,056.33	258.5	1.67638	354.4
49	998.728	18.	1.80971	72.9
73	261.451	282.2	.485109	293.8
97	62.4267	239.2	2.29297	127.

Sum of square of source currents = 47.4102
Total power = 4,700. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00128173	.00129762
Y(1, 2)	.000613854	-.000214045
Y(1, 3)	-5.7338E-09	-3.7088E-07
Y(1, 4)	-.000360777	-.000224433
Y(1, 5)	.00222827	.00012224
Y(2, 1)	.000613852	-.000214051
Y(2, 2)	.00099238	.00132238
Y(2, 3)	3.7076E-07	-4.2206E-07
Y(2, 4)	-.000328783	-.000447235
Y(2, 5)	.000940523	-.00131043
Y(3, 1)	-5.738E-09	-3.7088E-07
Y(3, 2)	3.7076E-07	-4.2205E-07
Y(3, 3)	.00104142	.00148313
Y(3, 4)	-3.4632E-07	3.8749E-07
Y(3, 5)	-1.3365E-06	1.8398E-06
Y(4, 1)	-.000360778	-.000224432
Y(4, 2)	-.000328784	-.000447233
Y(4, 3)	-3.4632E-07	3.8749E-07
Y(4, 4)	.000847826	.00156842
Y(4, 5)	-.000148172	-.0021174
Y(5, 1)	.00222832	.000122274
Y(5, 2)	.000940564	-.00131043
Y(5, 3)	-1.3365E-06	1.8398E-06
Y(5, 4)	-.000148118	-.00211744
Y(5, 5)	.0267399	.0121996

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	301.58	-445.063
Z(1, 2)	90.1149	148.751
Z(1, 3)	.106007	-.00126391
Z(1, 4)	7.46093	-47.5102
Z(1, 5)	-14.6951	41.9254

```
. z(2, 1)       90.1135          148.752
  z(2, 2)       330.195          -476.473
  z(2, 3)       .140601          .0347312
  z(2, 4)       133.073          -108.431
  z(2, 5)       23.1338          19.516
  z(3, 1)       .106006          -.00126407
  z(3, 2)       .140601          .0347305
  z(3, 3)       317.097          -451.591
  z(3, 4)       -.113759         -.103111
  z(3, 5)       -.0375645        -.0315412
  z(4, 1)       7.46053          -47.5104
  z(4, 2)       133.074          -108.431
  z(4, 3)       -.113759         -.103111
  z(4, 4)       343.971          -501.437
  z(4, 5)       48.8948          16.4135
  z(5, 1)       -14.6943         41.9246
  z(5, 2)       23.1339          19.5153
  z(5, 3)       -.0375641        -.0315412
  z(5, 4)       48.8943          16.4119
  z(5, 5)       30.1812          -12.7862
```

CURRENT rms
Frequency = 1.6 MHz
Input power = 4,700. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	3.48236	132.8	-2.36436	2.55668
2	0	0	7.375	2.14158	105.1	-.55803	2.0676
3	0	0	14.75	1.84142	70.2	.622814	1.7329
4	0	0	22.125	2.18675	40.6	1.65933	1.42425
5	0	0	29.5	2.82891	23.6	2.59298	1.13101
6	0	0	36.875	3.53984	13.9	3.43616	.850432
7	0	0	44.25	4.23023	7.9	4.18987	.582983
8	0	0	51.625	4.86212	3.9	4.85088	.330392
9	0	0	59.	5.41528	1.	5.41445	.0949229
10	0	0	66.375	5.87686	358.8	5.87561	-.120987
11	0	0	73.75	6.23787	357.1	6.22992	-.314932
12	0	0	81.125	6.49191	355.7	6.47379	-.48467
13	0	0	88.5	6.63467	354.6	6.60486	-.628212
14	0	0	95.875	6.66373	353.6	6.62208	-.743885
15	0	0	103.25	6.57843	352.7	6.52582	-.830364
16	0	0	110.625	6.37982	352.	6.3179	-.886735
17	0	0	118.	6.0705	351.4	6.00154	-.912459
18	0	0	125.375	5.65452	350.8	5.58124	-.907403
19	0	0	132.75	5.13714	350.2	5.06263	-.871786
20	0	0	140.125	4.52448	349.7	4.45209	-.806139
21	0	0	147.5	3.82294	349.3	3.75621	-.71116
22	0	0	154.875	3.03801	348.8	2.98066	-.5875
23	0	0	162.25	2.17144	348.4	2.12741	-.435073
24	0	0	169.625	1.21428	348.	1.18795	-.251524
END	0	0	177.	0	0	0	0
GND	14.2109	96.3173	0	1.67639	354.4	1.66829	-.164527
26	14.2109	96.3173	7.45833	.704948	2.6	.704243	.0315307
27	14.2109	96.3173	14.9167	.173675	68.3	.0641546	.161391
28	14.2109	96.3173	22.375	.576612	151.3	-.505884	.276701
29	14.2109	96.3173	29.8333	1.09589	159.6	-1.02724	.381769
30	14.2109	96.3173	37.2917	1.57956	162.4	-1.50559	.477701
31	14.2109	96.3173	44.75	2.02088	163.8	-1.94048	.564337
32	14.2109	96.3173	52.2083	2.41571	164.6	-2.3291	.64104
33	14.2109	96.3173	59.6667	2.7599	165.2	-2.66781	.706997
34	14.2109	96.3173	67.125	3.04941	165.5	-2.95283	.761371
35	14.2109	96.3173	74.5833	3.28057	165.8	-3.18068	.803381
36	14.2109	96.3173	82.0417	3.45034	166.	-3.34843	.832372
37	14.2109	96.3173	89.5	3.55639	166.2	-3.45386	.847837
38	14.2109	96.3173	96.9583	3.59726	166.3	-3.49553	.849449
39	14.2109	96.3173	104.417	3.5724	166.4	-3.47295	.837074
40	14.2109	96.3173	111.875	3.48216	166.5	-3.38646	.81077
41	14.2109	96.3173	119.333	3.32784	166.6	-3.23734	.770797
42	14.2109	96.3173	126.792	3.11153	166.7	-3.02766	.71758
43	14.2109	96.3173	134.25	2.83613	166.7	-2.76024	.651723
44	14.2109	96.3173	141.708	2.50505	166.8	-2.43842	.573934
45	14.2109	96.3173	149.167	2.1219	166.8	-2.06574	.484962
46	14.2109	96.3173	156.625	1.68987	166.8	-1.64533	.385451
47	14.2109	96.3173	164.083	1.21008	166.8	-1.17828	.27557
48	14.2109	96.3173	171.542	.677633	166.9	-.659873	.154122
END	14.2109	96.3173	179.	0	0	0	0
GND	242,359.	40,630.9	0	1.80971	72.9	.530625	1.73017
50	242,359.	40,630.9	7.58333	1.17048	45.7	.817523	.837661
51	242,359.	40,630.9	15.1667	1.02883	13.7	.999441	.244159
52	242,359.	40,630.9	22.75	1.1869	346.2	1.15252	-.283569
53	242,359.	40,630.9	30.3333	1.49439	329.2	1.2835	-.765402
54	242,359.	40,630.9	37.9167	1.84415	319.1	1.3945	-1.20675
55	242,359.	40,630.9	45.5	2.18904	312.8	1.48595	-1.60743
56	242,359.	40,630.9	53.0833	2.50762	308.4	1.55764	-1.96518
57	242,359.	40,630.9	60.6667	2.78823	305.3	1.60922	-2.27697
58	242,359.	40,630.9	68.25	3.0234	302.9	1.64039	-2.5397
59	242,359.	40,630.9	75.8333	3.20794	301.	1.65096	-2.75049

60	242,359.	40,630.9	83.4167	3.33813	299.4	1.64095	-2.90696
61	242,359.	40,630.9	91.	3.41147	298.2	1.61063	-3.00732
62	242,359.	40,630.9	98.5833	3.42647	297.1	1.56049	-3.0505
63	242,359.	40,630.9	106.167	3.38263	296.2	1.49128	-3.03616
64	242,359.	40,630.9	113.75	3.28038	295.3	1.40401	-2.96474
65	242,359.	40,630.9	121.333	3.12101	294.6	1.29987	-2.83743
66	242,359.	40,630.9	128.917	2.90658	294.	1.1803	-2.65615
67	242,359.	40,630.9	136.5	2.63983	293.4	1.04685	-2.42339
68	242,359.	40,630.9	144.083	2.32398	292.8	.901174	-2.14214
69	242,359.	40,630.9	151.667	1.96245	292.3	.74491	-1.81558
70	242,359.	40,630.9	159.25	1.55823	291.8	.579466	-1.44648
71	242,359.	40,630.9	166.833	1.11249	291.4	.405542	-1.03594
72	242,359.	40,630.9	174.417	.620901	290.9	.2219	-.579895
END	242,359.	40,630.9	182.	0	0	0	0
GND	210.258	174.269	0	.48511	293.8	.195639	-.443911
74	210.258	174.269	7.58333	.495832	265.	-.0432832	-.493939
75	210.258	174.269	15.1667	.559417	249.1	-.199269	-.522723
76	210.258	174.269	22.75	.63889	238.4	-.335151	-.543924
77	210.258	174.269	30.3333	.721522	230.8	-.456388	-.558842
78	210.258	174.269	37.9167	.800851	225.2	-.56459	-.56798
79	210.258	174.269	45.5	.873018	220.9	-.659899	-.571571
80	210.258	174.269	53.0833	.935468	217.5	-.741933	-.569768
81	210.258	174.269	60.6667	.986393	214.8	-.810134	-.562721
82	210.258	174.269	68.25	1.0245	212.5	-.863959	-.550611
83	210.258	174.269	75.8333	1.04884	210.6	-.902927	-.533662
84	210.258	174.269	83.4167	1.05883	208.9	-.926729	-.512147
85	210.258	174.269	91.	1.05414	207.5	-.935214	-.486392
86	210.258	174.269	98.5833	1.03471	206.2	-.928426	-.456771
87	210.258	174.269	106.167	1.00073	205.	-.906611	-.423703
88	210.258	174.269	113.75	.952652	204.	-.870217	-.387645
89	210.258	174.269	121.333	.891094	203.1	-.81987	-.349087
90	210.258	174.269	128.917	.816907	202.2	-.756401	-.308536
91	210.258	174.269	136.5	.731063	201.4	-.680753	-.266511
92	210.258	174.269	144.083	.634654	200.6	-.59399	-.223522
93	210.258	174.269	151.667	.528795	199.9	-.497199	-.180045
94	210.258	174.269	159.25	.41447	199.2	-.391353	-.136483
95	210.258	174.269	166.833	.292171	198.6	-.276954	-.0930597
96	210.258	174.269	174.417	.160996	197.9	-.153175	-.0495684
END	210.258	174.269	182.	0	0	0	0
GND	157.193	-107.351	0	2.29297	127.	-1.37999	1.83121
98	157.193	-107.351	6.875	2.32522	127.5	-1.4154	1.8448
99	157.193	-107.351	13.75	2.3014	127.8	-1.4099	1.81896
100	157.193	-107.351	20.625	2.23629	128.	-1.37704	1.76204
101	157.193	-107.351	27.5	2.13212	128.2	-1.31857	1.6755
102	157.193	-107.351	34.375	1.99067	128.4	-1.23577	1.56065
103	157.193	-107.351	41.25	1.81366	128.5	-1.12973	1.41883
104	157.193	-107.351	48.125	1.60287	128.7	-1.00154	1.25144
105	157.193	-107.351	55.	1.35996	128.8	-.852228	1.05981
106	157.193	-107.351	61.875	1.08614	128.9	-.682506	.844916
107	157.193	-107.351	68.75	.781102	129.1	-.49212	.60658
108	157.193	-107.351	75.625	.440568	129.2	-.278292	.341547
END	157.193	-107.351	82.5	0	0	0	0

FIGURE 10
DERIVED DIRECTIONAL PARAMETERS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

DAY:

	Theoretical		Loop Node Current		Normalized Antenna Monitor	
Tower	Field	Phase	Amplitude	Phase	Amplitude	Phase
1 (S)	1.000	0.000°	5.22582	1.2°	1.000	0.0°
2 (SW)	.834	96.468°	4.297	96.5°	.822	95.3°
3 (N)	.310	-0.141°	1.57148	1.1°	.301	-0.1°
4 (NW)	.336	19.062°	1.68297	19.1°	.322	17.9°
5 (E)	.419	46.375°	4.64939	46.4°	.890	45.2°

NIGHT:

	Theoretical		Loop Node Current		Normalized Antenna Monitor	
Tower	Field	Phase	Amplitude	Phase	Amplitude	Phase
1 (S)	1.000	0.000°	5.41528	1.0°	1.000	0.0°
2 (SW)	.526	165.140°	2.7599	165.2°	.510	164.2°
3 (N)	.530	-55.950°	2.78823	305.3°	.515	-55.7°
4 (NW)	.182	-146.050°	.986393	214.8°	.182	-146.2°
5 (E)	.185	128.200°	2.13212	128.2°	.394	127.2°

FIGURE 11
WPOM TOWER BASE CIRCUIT ANALYSIS DESCRIPTION

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

CIRCUIT ANALYSIS

Circuit Analysis was performed on each Tower of the WPOM model. "Phasetek" nodal Circuit Analysis program was used to compute base model Input/Output voltages, currents, and impedances. "Z_1" represents the ATU Shunt impedance, "Z_2" represents the Tower Feed impedance, and "Z_3" represents the Tower Base Shunt impedance.

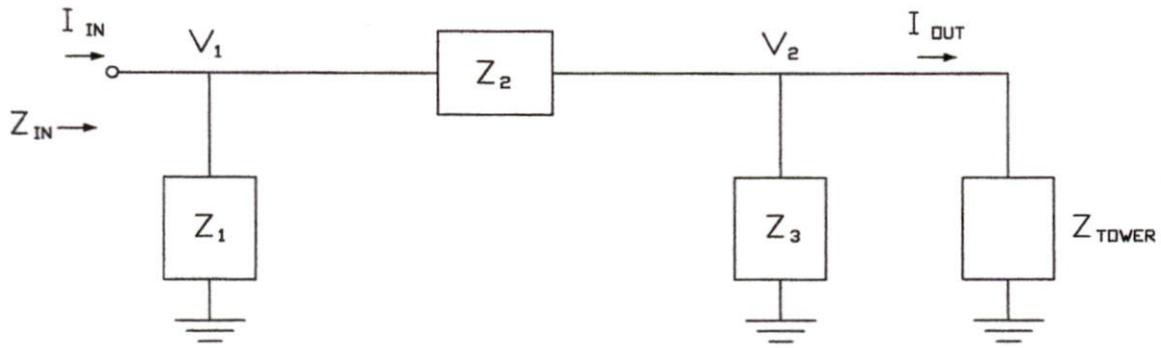


FIGURE 12
WPOM CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WPOM
NETWORK ID : TOWER 1 (OTHERS OPEN)

FREQUENCY : 1600.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 4900.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 25.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7105.10 OHMS
TOWER IMPEDANCE (R,X) : 299.75, -445.91 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	4900.00
2		GROUND	264.98	-430.10
1		2	0.00	25.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	104.36	-1.55

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	313.80	-423.11	526.77	-53.44
INPUT CURRENT (AMPS) :	0.11	0.15	0.19	53.44
OUTPUT CURRENT (AMPS) :	0.11	0.16	0.19	54.54

INPUT/OUTPUT CURRENT RATIO = 0.9774
INPUT/OUTPUT PHASE = -1.10 DEGREES

FIGURE 12
WPOM CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WPOM
NETWORK ID : TOWER 2 (OTHERS OPEN)

FREQUENCY : 1600.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 4900.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 25.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7105.10 OHMS
TOWER IMPEDANCE (R,X) : 330.46, -476.99 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	4900.00
2		GROUND	289.64	-459.61
1		2	0.00	25.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	104.02	-1.46

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	347.30	-454.38	571.91	-52.61
INPUT CURRENT (AMPS) :	0.11	0.14	0.17	52.61
OUTPUT CURRENT (AMPS) :	0.11	0.14	0.18	53.82

INPUT/OUTPUT CURRENT RATIO = 0.9755
INPUT/OUTPUT PHASE = -1.22 DEGREES

FIGURE 12
WPOM CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WPOM
NETWORK ID : TOWER 3 (OTHERS OPEN)

FREQUENCY : 1600.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 4900.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 25.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7105.10 OHMS
TOWER IMPEDANCE (R,X) : 317.10, -451.59 OHMS

NODE	TO	NODE	IMPEDANCE (OHMS) R	X
1		GROUND	0.00	4900.00
2		GROUND	279.84	-436.35
1		2	0.00	25.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	104.19	-1.55

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	332.19	-428.33	542.05	-52.21
INPUT CURRENT (AMPS) :	0.11	0.15	0.18	52.21
OUTPUT CURRENT (AMPS) :	0.11	0.15	0.19	53.37

INPUT/OUTPUT CURRENT RATIO = 0.9770
INPUT/OUTPUT PHASE = -1.16 DEGREES

FIGURE 12
WPOM CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WPOM
NETWORK ID : TOWER 4 (OTHERS OPEN)

FREQUENCY : 1600.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 4900.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 25.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7105.10 OHMS
TOWER IMPEDANCE (R,X) : 346.08, -501.44 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	4900.00
2	GROUND	301.33	-482.09
1	2	0.00	25.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	103.84	-1.39

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	364.85	-479.38	602.42	-52.73
INPUT CURRENT (AMPS) :	0.10	0.13	0.17	52.73
OUTPUT CURRENT (AMPS) :	0.10	0.14	0.17	54.00

INPUT/OUTPUT CURRENT RATIO = 0.9739
INPUT/OUTPUT PHASE = -1.28 DEGREES

FIGURE 12
WPOM CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WPOM
NETWORK ID : TOWER 5 (OTHERS OPEN)

FREQUENCY : 1600.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00,100000.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 37.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7105.10 OHMS
TOWER IMPEDANCE (R,X) : 30.10, -12.74 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	100000.00
2	GROUND	29.99	-12.84
1	2	0.00	37.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	84.72	-62.03

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	29.98	24.16	38.50	38.87
INPUT CURRENT (AMPS) :	2.02	-1.63	2.60	-38.87
OUTPUT CURRENT (AMPS) :	2.01	-1.63	2.59	-39.09

INPUT/OUTPUT CURRENT RATIO = 1.0020
INPUT/OUTPUT PHASE = 0.23 DEGREES

FIGURE 13
WPOM REFERENCE FIELD INTENSITY MEASUREMENTS
JANUARY, 2021

WPOM DAY REFERENCE POINT MEASUREMENTS – AUGUST 1, 2020

						CO-ORD NAD27			
Radial		**Dist km**	**mV/m**	**Time**		**Deg**	**Min**	**Sec**	**Description**
63°	1	2.59	191	1305	N	26	45	33.1	North parking lot, Bank of America
					W	80	06	34.4	
	2	2.96	182	1324	N	26	45	38.7	West driveway, Sams Club
					W	80	06	22.2	
	3	3.37	230	1331	N	26	45	44.2	NE corner parking lot, Walmart
					W	80	06	08.7	
99.5°	1	1.42	166	1252	N	26	44	47.7	Back of apartment parking lot
					W	80	07	07.1	
	2	1.91	140	1315	N	26	44	44.7	Appaloosa St. at curve section
					W	80	06	49.8	
	3	2.30	93.9	1311	N	26	44	42.9	Military Trail/Appaloosa St.
					W	80	06	35.7	
139.5°	1	1.30	505	1226	N	26	44	22.9	South side of Ernest St.
					W	80	07	27.4	
	2	2.07	219	1237	N	26	44	04.1	Parking lot Palm Gate Plaza
					W	80	07	08.9	
	3	2.44	201	1242	N	26	43	55.1	Lakeside Green Blvd. West of Balmoral
					W	80	06	59.9	

FIGURE 13

WPOM REFERENCE FIELD INTENSITY MEASUREMENTS

CONTINUED

WPOM DAY REFERENCE POINT MEASUREMENTS – AUGUST 1, 2020

						CO-ORD NAD27			
Radial		**Dist km**	**mV/m**	**Time**		**Deg**	**Min**	**Sec**	**Description**
217.5°	1	5.70	18.0	1432	N	26	42	28.6	South side of Okeechobee Blvd.
					W	80	10	03.9	
	2	6.10	15.2	1424	N	26	42	18.3	Benoist Farms Rd. in front of Elementary
					W	80	10	13.4	School
	3	6.34	17.4	1427	N	26	42	12.2	Windora Way at gate
					W	80	10	18.0	
317°	1	9.41	1.70	1507	N	26	48	37.7	East side of N. State Road 7
					W	80	11	51.0	
	2	9.48	0.82	1504	N	26	48	39.5	#10100 Northlake Blvd. at Dental Care
					W	80	11	53.0	
	3	9.50	2.31	1520	N	26	48	41.0	Northlake Blvd., North side
					W	80	11	51.9	
359°	1	1.25	98.2	1406	N	26	45	35.6	South side of Bridge, 45th St.
					W	80	07	58.6	
	2	1.28	94.1	1341	N	26	45	36.5	North side of Bridge, 45th St.
					W	80	07	58.7	
	3	5.34	16.0	1351	N	26	47	47.9	Beeline Hwy. South side, at 55MPH
					W	80	08	01.4	

FIGURE 13

WPOM REFERENCE FIELD INTENSITY MEASUREMENTS

CONTINUED

WPOM NIGHT REFERENCE POINT MEASUREMENTS – AUGUST 1, 2020

CO-ORD NAD27

Radial		Dist km	mV/m	Time		Deg	Min	Sec	Description
0.5°	1	1.26	77.6	1646	N	26	45	36.0	South side of bridge, 45th St.
					W	80	07	57.5	
	2	1.28	90.1	1650	N	26	45	36.7	North side of bridge, 45th St.
					W	80	07	57.5	
	3	5.22	12.8	1635	N	26	47	44.2	Beeline Exp. South side at pull off
					W	80	07	56.3	
69°	1	3.20	128	1700	N	26	45	32.0	Parking lot, #3200 45th St.
					W	80	06	09.6	
	2	3.61	126	1704	N	26	45	37.0	#200 Northpoint Parkway
					W	80	05	55.5	
	3	4.05	172	1713	N	26	45	41.9	Center parking lot, #701 Northpoint
					W	80	05	41.1	Parkway
106.5°	1	2.08	94.8	1747	N	26	44	35.7	#4521 Discovery Lane
					W	80	06	45.6	
	2	2.14	84.6	1749	N	26	44	35.2	Amherst Drive
					W	80	06	43.9	
	3	2.62	68.8	1725	N	26	44	30.7	#4400 Portofino Way.
					W	80	06	27.0	

FIGURE 13

WPOM REFERENCE FIELD INTENSITY MEASUREMENTS

CONTINUED

WPOM NIGHT REFERENCE POINT MEASUREMENTS – AUGUST 1, 2020

					CO-ORD NAD27				
Radial		**Dist km**	**mV/m**	**Time**		**Deg**	**Min**	**Sec**	**Description**
150.5°	1	1.12	639	1740	N W	26 80	44 07	23.3 37.9	South side, Ernest St.
	2	2.80	116	1754	N W	26 80	43 07	36.0 08.3	North entrance to St. Paul church
	3	3.60	64.7	1804	N W	26 80	43 06	13.8 53.1	Back of Crosstown plaza at fire Hydrant
218°	1	5.74	21.4	1830	N W	26 80	42 10	28.6 06.6	South side of Okeechobee Blvd.
	2	6.04	17.1	1817	N W	26 80	42 10	21.2 12.9	Benoist Farms Rd. at school entrance
	3	6.37	15.3	1821	N W	26 80	42 10	12.6 20.5	#1740 Windorah Way
265°	1	8.27	49.2	1859	N W	26 80	44 12	31.2 57.0	110th Ave. North at 30MPH sign
	2	9.07	31.0	1846	N W	26 80	44 13	29.3 25.9	Mellow Court/Mango Blvd.
	3	9.48	22.8	1850	N W	26 80	44 13	28.5 40.7	#4361 Royal Palm Beach Blvd.

FIGURE 13

WPOM REFERENCE FIELD INTENSITY MEASUREMENTS

CONTINUED

WPOM NIGHT REFERENCE POINT MEASUREMENTS – AUGUST 1, 2020

						CO-ORD NAD27			
Radial		**Dist km**	**mV/m**	**Time**		**Deg**	**Min**	**Sec**	**Description**
317°	1	9.41	1.49	1620	N	26	48	37.7	East side of N. State Road 7
					W	80	11	51.0	
	2	9.48	0.74	1614	N	26	48	39.5	#10100 Northlake Blvd. at Dental Care
					W	80	11	53.0	
	3	9.50	2.54	1623	N	26	48	41.0	Northlake Blvd., North side
					W	80	11	51.9	

FIGURE 14
CALCULATION OF SAMPLING LOOP LOCATIONS
WPOM, 1600 KHZ, DA-2
RIVIERA BEACH, FLORIDA
JANUARY, 2021

All five (5) towers are identical in face width and cross section geometry. Towers 1-4 are physically 163.0° and tower 5 is 80.0°. A model was generated with tower #1 excited with 1000 watts and towers 2 and 5 to determine the location of minimum current for minimum radiation, which is the location of the sampling loops. Towers 1-4 are identical in height, therefore, the location is the same for them. These locations are 1/3 the physical height of the towers, which is 93 ft. above the base for towers 1-4 and 45 ft. above the base for tower 5.

WPOM SAMPLING LOOP LOCATION CALCULATION

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.6 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	0	0
3	0	0

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	959.983	73.3	1.55856	122.1
25	164.674	324.1	.830639	48.
49	73.624	233.	.15547	322.6

Sum of square of source currents = 6.2865
Total power = 1,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00132955	.00127151
Y(1, 2)	.000685057	-.000225363
Y(1, 3)	.00248386	.000247104
Y(2, 1)	.000685056	-.000225369
Y(2, 2)	.00108622	.00134006
Y(2, 3)	.0012028	-.00104142
Y(3, 1)	.0024839	.000247146
Y(3, 2)	.00120284	-.00104142
Y(3, 3)	.0269814	.0136619

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	304.079	-440.421
Z(1, 2)	85.9338	167.03
Z(1, 3)	-20.1188	43.8174
Z(2, 1)	85.9321	167.031
Z(2, 2)	276.183	-437.356
Z(2, 3)	4.1972	11.8684
Z(3, 1)	-20.1178	43.8169
Z(3, 2)	4.19721	11.8682
Z(3, 3)	29.08	-18.9411

WPOM SAMPLING LOOP LOCATION CALCULATION

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.2911	24
		0	0	177.		
2	none	97.36	278.393	0	.2911	24
		97.36	278.393	179.		
3	none	190.352	34.33	0	.2911	12
		190.352	34.33	82.5		

Number of wires = 3
current nodes = 60

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	6.875	2	7.45833
radius	1	.2911	1	.2911

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.6	0	1	.0190972	.0207176

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,357.62	73.3	voltage
2	25	1	232.884	324.1	voltage
3	49	1	104.12	233.	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.6	405.65	-463.5	615.94	311.2	18.775	-.92613	-7.166
source = 2; node 25, sector 1							
1.6	21.133	-197.12	198.25	276.1	39.536	-.43949	-10.166
source = 3; node 49, sector 1							
1.6	2.604	-473.56	473.56	270.3	1,741.6	-1.E-02	-26.394

CURRENT rms
Frequency = 1.6 MHz
Input power = 1,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	1.55856	122.1	-.828777	1.31994
2	0	0	7.375	1.06301	89.	.0177457	1.06286
3	0	0	14.75	1.05415	57.4	.568418	.887771
4	0	0	22.125	1.27644	34.7	1.04912	.727088
5	0	0	29.5	1.5873	21.2	1.47945	.575116
6	0	0	36.875	1.91438	13.	1.86539	.43034
7	0	0	44.25	2.22696	7.6	2.20761	.292893
8	0	0	51.625	2.51018	3.7	2.50484	.163567
9	0	0	59.	2.75545	.9	2.75511	.0434278
10	0	0	66.375	2.95711	358.7	2.95637	-.0663705
11	0	0	73.75	3.11113	357.	3.10677	-.164688

12	0	0	81.125	3.21468	355.5	3.20491	-.250465
13	0	0	88.5	3.26593	354.3	3.24994	-.322766
14	0	0	95.875	3.2639	353.3	3.2416	-.380809
15	0	0	103.25	3.20843	352.4	3.18029	-.423987
16	0	0	110.625	3.10017	351.6	3.06706	-.45188
17	0	0	118.	2.94045	350.9	2.90357	-.464263
18	0	0	125.375	2.7313	350.3	2.6921	-.4611
19	0	0	132.75	2.47526	349.7	2.43538	-.44253
20	0	0	140.125	2.17528	349.2	2.13652	-.408838
21	0	0	147.5	1.83439	348.7	1.79864	-.360393
22	0	0	154.875	1.45518	348.2	1.42444	-.297525
23	0	0	162.25	1.03844	347.8	1.01482	-.2202
24	0	0	169.625	.579839	347.3	.565708	-.127232
END	0	0	177.	0	0	0	0
GND	14.2109	96.3173	0	.830638	48.	.555762	.617323
26	14.2109	96.3173	7.45833	.676441	46.7	.463802	.492403
27	14.2109	96.3173	14.9167	.569881	45.7	.39794	.40793
28	14.2109	96.3173	22.375	.470802	44.7	.334669	.331137
29	14.2109	96.3173	29.8333	.375918	43.6	.272261	.259206
30	14.2109	96.3173	37.2917	.284489	42.3	.210539	.191331
31	14.2109	96.3173	44.75	.196841	40.4	.149974	.127492
32	14.2109	96.3173	52.2083	.113829	36.7	.0913064	.067972
33	14.2109	96.3173	59.6667	.0377691	20.4	.0353956	.013178
34	14.2109	96.3173	67.125	.0401624	245.2	-.0168681	-.0364484
35	14.2109	96.3173	74.5833	.103207	231.2	-.0646175	-.0804749
36	14.2109	96.3173	82.0417	.159697	227.9	-.107047	-.118508
37	14.2109	96.3173	89.5	.207697	226.3	-.143441	-.150209
38	14.2109	96.3173	96.9583	.246432	225.3	-.173193	-.175307
39	14.2109	96.3173	104.417	.275376	224.7	-.195826	-.193608
40	14.2109	96.3173	111.875	.29418	224.2	-.210993	-.204997
41	14.2109	96.3173	119.333	.302659	223.8	-.218487	-.209442
42	14.2109	96.3173	126.792	.300784	223.5	-.218235	-.20699
43	14.2109	96.3173	134.25	.288669	223.2	-.210286	-.197762
44	14.2109	96.3173	141.708	.266548	223.	-.194798	-.181939
45	14.2109	96.3173	149.167	.234729	222.9	-.171993	-.159737
46	14.2109	96.3173	156.625	.193508	222.8	-.142096	-.131355
47	14.2109	96.3173	164.083	.142956	222.6	-.105167	-.096831
48	14.2109	96.3173	171.542	.0824032	222.5	-.0607201	-.0557078
END	14.2109	96.3173	179.	0	0	0	0
GND	157.193	-107.351	0	.155468	322.6	.123579	-.0943307
50	157.193	-107.351	6.875	.0915621	322.4	.0725886	-.0558078
51	157.193	-107.351	13.75	.0534666	322.2	.0422399	-.0327791
52	157.193	-107.351	20.625	.0230806	321.6	.0180799	-.0143468
53	157.193	-107.351	27.5	1.29E-03	158.9	-1.2E-03	4.64E-04
54	157.193	-107.351	34.375	.0201001	143.3	-.0161122	.0120171
55	157.193	-107.351	41.25	.0337306	142.7	-.0268404	.0204291
56	157.193	-107.351	48.125	.0422005	142.4	-.0334558	.0257215
57	157.193	-107.351	55.	.0455068	142.2	-.0359743	.0278696
58	157.193	-107.351	61.875	.0435922	142.	-.0343718	.0268115
59	157.193	-107.351	68.75	.0362945	141.9	-.0285451	.0224158
60	157.193	-107.351	75.625	.0231882	141.7	-.018189	.0143824
END	157.193	-107.351	82.5	0	0	0	0