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October 2, 2020

FILED BY E-MAIL PURSUANT TO
Public Notice, *Audio Division Announces Procedures Related to Coronavirus,* DA 20-266, rel. March 13, 2020, addressed to Mr. James Bradshaw, Senior Deputy Chief (james.bradshaw@fcc.gov); and Nazifa Sawez, Esq. (nazifa.sawez@fcc.gov)

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
9050 Junction Drive
Annapolis Junction, MD 20701

Re: Relevant Radio, Inc.
Application for Modification of License and Change to Commercial Status
WEGP(AM), Presque Isle, Maine (Facility No. 9423)

Dear Ms. Dortch:

Transmitted herewith, by the undersigned counsel to Relevant Radio, Inc. ("RRI"), licensee of WEGP(AM), Presque Isle (Facility No. 9423) is an application filed on FCC Form 302-AM to: (a) provide a Method of Moments Proof; and (b) change the status of WEGP(AM), Paradise, Nevada to a commercial station.

RRI has electronically paid the required $1,560.00 application processing fee, utilizing the Commission's Fee Filer System. Confirmation of payment of the filing here is attached hereto, along with the Form 302-AM.

Please direct any questions regarding this matter to the undersigned.

Sincerely,

Mark B. Denbo
Counsel to Relevant Radio, Inc.

cc: Karen Workeman/FCC (*via e-mail*)

Fee Filer

FCC | Fees | Fee Filer

Report for Submitted Fees

Report Date : 10/02/2020 03:25:24

- The FCC has not yet received payment for the fees reflected in this report. Click here to continue to pay online or print your Form 159-E.
- Proceed to the Payment Selection screen to pay online by credit card, ACH payment, or wire transfer.

Payer FRN : 0005032248
Payer Name :Relevant Radio, Inc.
Remittance ID: 3457069
Amount filed : $1,560.00

PRINT

Licensee : Relevant Radio, Inc. (FRN: 0005032248)							
Call Sign	P T C	Quantity	FCC Code 1	FCC Code 2	Bill Number	Amount	Late Fees
WEGP	MMR	1	9423	ME, Presque Isle	N/A	$725.00	$0.00
WEGP	MOR	1	9423	ME, Presque Isle	N/A	$835.00	$0.00
Total:	*****	**2**	********	********	********	**$1,560.00**	**$0.00**

CLOSE PRINT

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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)

Relevant Radio, Inc.

MAILING ADDRESS (Line 1) (Maximum 35 characters)

1496 Bellevue, Suite 202

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
Green Bay	WI	54311

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
920-884-1460	WEGP	Facility No. 9423

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
MMR	0001	$ 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
MOR	0001	$ 835.00	

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

TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
$ 1,560.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Relevant Radio, Inc.		
MAILING ADDRESS 1496 Bellevue, Suite 202		
CITY Green Bay	STATE WI	ZIP CODE 54311

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
WEGP	Presque Isle, ME	N/A	N/A	N/A

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

☐ Yes ☑ No

If No, explain in an Exhibit.

Exhibit No. 1

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. N/A

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

☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No. N/A

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

☐ Yes ☐ No

☑ Does not apply

If No, explain in an Exhibit.

Exhibit No. N/A

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

☐ Yes ☑ No

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

Exhibit No. N/A

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

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No. N/A

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

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

CERTIFICATION

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

☑ Yes ☐ No

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

Name	Signature	
Fr. Francis J. Hoffman	Francis V. Hoffman	
Title	Date	Telephone Number
Executive Director	10/2/2020	920-884-1460

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
Relevant Radio, 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
WEGP	N/A	1390	Unlimited	10.0	25.0

2. Station location

State	City or Town
MAINE	PRESQUE ISLE

3. Transmitter location

State	County	City or Town	Street address (or other identification)
ME	Aroostook	Presque Isle	Chapman Road

4. Main studio location

State	County	City or Town	Street address (or other identification)
N/A	N/A	N/A	N/A

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

State	County	City or Town	Street address (or other identification)
WI	Brown	Green Bay	1496 Bellevue St., Suite 202

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
14.5	22.4

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50.0	50.0	-7.6	-7.6

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(SW)	53.1		1.292			
2(NE)	0.0		1.000			

Manufacturer and type of antenna monitor: Potomac Instruments 1901-2

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	59.9	61.6	62.5	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	46	o	39	'	15	"	West Longitude	68	o	03	'	00	"

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 Construction

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) Phasetek Inc. 550 California Rd., Unit 11 Quakertown, PA 18951	Date September 30, 2020 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

WEGP, 1390 KHZ, DA-N

PRESQUE ISLE, MAINE

SEPTEMBER, 2020

PHASETEK INC.

ENGINEERING STATEMENT CONCERNING
APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

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PHASETEK INC.

ENGINEERING STATEMENT CONCERNING
APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

SUMMARY

Adjustment of the Antenna System and a Proof of Performance employing Moment Method Modeling were performed on Radio Station WEGP, 1390 KHz, Presque Isle, Maine, after replacement of Antenna Phasing equipment and other site modifications. This report was prepared on behalf of Relevant Radio, Inc. licensee of Radio Station WEGP.

SITE MODIFICATIONS

The WEGP Transmitter site is that as currently licensed under BML-20150515ABM. The Antenna Phasing and Branching equipment has been replaced. Both Towers remain unchanged with the exception of the removal of the STL isocoupler at tower 1. New transmission and sampling lines have been installed for both towers. There are no changes to the presently licensed standard radiation pattern; 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 WEGP under the new rules.

REFERENCE POINTS

Reference Points were measured at pattern minima and the center of the major lobe for the Directional Night mode of operation. These Points and their measured field intensity are shown in Figure 12.

DAY NON-DIRECTIONAL OPERATION

Day non-directional operation utilizes tower #1 as currently licensed. Tower #2 is detuned for Day operation. A new location of power measurement (common point) has been implemented.

PHASETEK INC.

ENGINEERING STATEMENT CONCERNING
APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

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, the Night Directional Antenna System was computed. For the Directional mode, 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

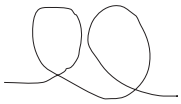
All Tower Resistance and Reactance measurements were made with a HP 8753ES network analyzer and Tunwall directional coupler. Before use, tests of known impedances were made to verify operation. All Field Intensity Measurements were made with a Potomac Instruments Field Intensity Meter, model PI 4100, 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 WEGP Antenna System has been constructed and adjusted in accordance with all applicable Commission rules and regulations. The foregoing was prepared on behalf of Relevant Radio, 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
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020



Kurt Gorman, President
Phasetek Inc.
Quakertown, Pennsylvania

FIGURE 1

ANTENNA SYSTEM AS ADJUSTED

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

ANTENNA SYSTEM DESCRIPTION

1. The Antenna System consists of two (2), uniform cross section, guyed, vertical steel transmitting Towers. All Towers stand 59.9M (100.0°) above their Base Insulators. The Towers are arranged with Tower 1 as a reference; Tower 2 is spaced 120.0° on a bearing of 60.0°T. Tower 1 supports a STL antenna. The feed for this Antenna is disconnected at the base. Both towers have aviation obstruction lighting. The lighting circuits are isolated at the base with a choke for each tower.

2. The Ground System for each Tower consists of (120) buried copper Radials, 54.9M in length, except where they intersect with copper transverse straps between Towers or property boundaries. Copper strap connects all Towers to the main Transmitter grounding point.

3. The Sampling System consists of two (2), Delta Electronics TCT-1-HV, 0.5 V/A Toroidal Current Transformers. All TCT's are at the Output of each Antenna Tuning Unit. These TCT's are connected to a Potomac Instruments 1901-2 Antenna Monitor via two (2) equal lengths of RFS LCF12-50J, 1/2" phase stabilized foam coaxial cable.

4. Tower registration numbers:
   Tower 1: 1247818
   Tower 2: 1247817

FIGURE 1
ANTENNA SYSTEM AS ADJUSTED

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
CONTINUED
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

ANTENNA SYSTEM DESCRIPTION – Continued

NON-DIRECTIONAL OPERATION (DAY)

COMMON POINT

Impedance = 50.0 – j 7.6 Ohms
Current = 22.4 Amperes
Power = 25,000 Watts

DIRECTIONAL OPERATION (NIGHT)

COMMON POINT

Impedance = 50.0 - j 7.6 Ohms
Current = 14.5 Amperes
Power = 10,530 Watts

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

FIGURE 2
WEGP SAMPLING SYSTEM DESCRIPTION/MEASUREMENTS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

SAMPLING SYSTEM DESCRIPTION

The Sampling System consists of Delta Electronics TCT-1-HV Toroidal Sampling Transformers (0.5 volt/amp) mounted at the base of each Tower. The sampling devices are connected to the Antenna Monitor with equal lengths of RFS LCF12-50J. The Antenna Monitor is a Potomac Instruments Model 1901-2, Serial Number 979.

SAMPLE LINE MEASUREMENTS

Impedance measurements were made of the Antenna Sampling Lines using a HP 8753ES network analyzer with a Tunwall directional coupler. Measurements were done with the lines open circuited and then connected to the TCT's.

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 below the carrier frequency, which is the closest one to the carrier frequency, was found to be 90 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 1390 KHz	Resonant Frequency (KHz) above 1390 KHz	Calculated Electrical Length (deg) at 1390 KHz	Measured Impedance (ohms) Connected to TCT @ 1390 KHz
Tower 1	1302.83	3918.85	96.0	51.7 –j 2.0
Tower 2	1302.04	3917.59	96.1	51.8 –j 1.9

FIGURE 2
WEGP SAMPLING SYSTEM DESCRIPTION/MEASUREMENTS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
CONTINUED
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

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	1954.2	2.06 +j 51.1	651.4	0.5 –j 50.1	50.62
2	1953.1	2.04 +j 51.1	651.0	0.5 –j 50.1	50.62

SAMPLING TCT MEASUREMENTS

Measurements of the Delta Electronics Model TCT-1-HV, 0.5 V/A Toroidal Current Transformers were performed by a Hewlett Packard 8752A, Network Analyzer. Measurements are normalized to Tower #2 (reference) and are within the manufacturer's rating of ± 2.0% and ± 2.0°.

FIGURE 2
WEGP SAMPLING SYSTEM DESCRIPTION/MEASUREMENTS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
CONTINUED
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

SAMPLING TCT MEASUREMENTS CONT'D

TOWER	TCT SERIAL #	MAGNITUDE	PHASE
1	3237	1.000	0.2^{o}
2	3248	1.000	0.0^{o}

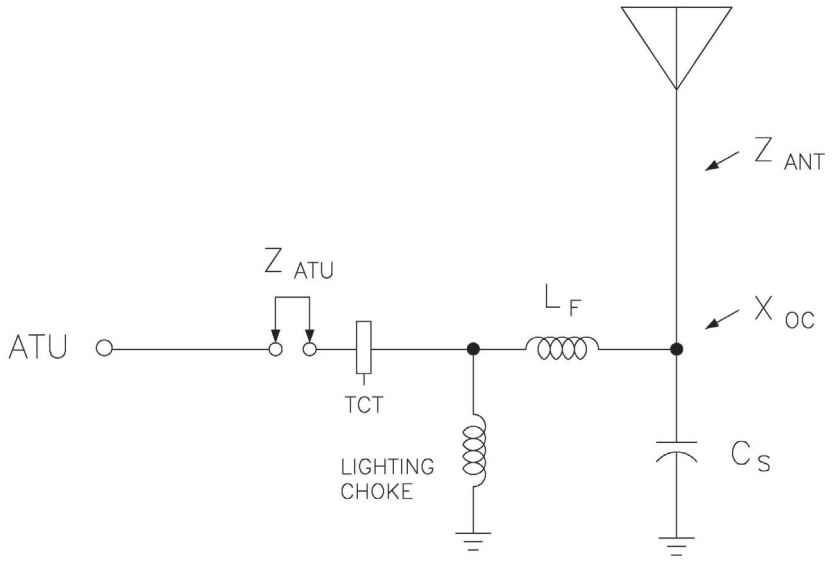
ANTENNA MONITOR MEASUREMENT

Measurement of the Potomac Instruments Model 1901-2 Antenna Monitor was performed to verify calibration. A single RF Voltage was applied to the Reference Input (Tower #2) and each other Input by use of a "T" divider and equal electrical length coaxial cables. This yields the following:

Tower	Ratio	Phase
1	1.001	-0.1^{0}
2	1.000	0.0^{0}

The above is within the manufacturer's rating of $\pm$ 1.0% and $\pm$ 1.0^{o}.

FIGURE 3
WEGP 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	10	2.86	+j25.0	85.6 +j 137.2	82.9 +j 159.9	82.6 +j 160.3
2	15	5.95	+j52.0	96.4 +j 151.0	93.4 +j 199.3	93.6 +j 200.0

Tower	Calculated X_{OC} (Ω)
1	+j 11,450.0
2	+j 23,338.5

FIGURE 4
WEGP MOMENT MODEL PARAMETERS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

Tower #	Wire #	# of Segments	Base Node
1	1	15	1
2	2	15	16

Tower #	Physical Height Degrees	Modeled Height Degrees	Modeled Radius Meters	% of Equivalent Radius
1	100.0	109.0	.1819	100.0
2	100.0	111.5	.2062	100.0

Both Towers are uniform cross section, guyed with Base Insulator. All towers are three (3) sided. Tower #1 has a 15" face width and tower #2 has a 17" face width.

The Base Insulator for tower #1 was manufactured by Austin Insulators, part number A-4722B, with an assumed capacity of 10pf (-j11,450.0 ohms @ 1390 kHz). Tower #2 base insulator was manufactured by Lapp with an assumed capacity of 15pF (-j7,633.3 ohms @ 1390 kHz).

Both Towers have Phasetek Inc. 3 wire lighting choke. These measure +j5,700 ohms @ 1390 kHz.

FIGURE 5
WEGP MOMENT SUMMARY FOR INDIVIDUAL TOWERS

WEGP TOWER 1 (OTHER 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	.1819	15
		0	0	109.		
2	none	120.	60.	0	.2062	15
		120.	60.	111.5		

Number of wires = 2
current nodes = 30

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	7.26667	2	7.43333
radius	1	.1819	2	.2062

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.39	0	1	.0201852	.0206482

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	16	0	23,338.5	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							
1.39	85.622	137.24	161.76	58.	6.5432	-2.6759	-3.3726

FIGURE 5 CONTINUED
WEGP MOMENT SUMMARY FOR INDIVIDUAL TOWERS

```
WEGP TOWER 2 (OTHER 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            .1819        15
           0            0            109.
 2    none 120.         60.          0            .2062        15
           120.         60.          111.5

Number of wires          =  2
          current nodes  =  30

                         minimum                   maximum
Individual wires      wire    value             wire  value
segment length         1      7.26667            2    7.43333
radius                 1      .1819              2    .2062


ELECTRICAL DESCRIPTION
Frequencies (MHz)
     frequency                no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   1.39         0             1      .0201852       .0206482

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

Lumped loads
            resistance    reactance     inductance  capacitance passive
load  node  (ohms)        (ohms)        (mH)        (uF)        circuit
 1     1    0             11,450.       0           0            0



IMPEDANCE
   normalization = 50.
freq     resist   react    imped    phase    VSWR    S11      S12
(MHz)    (ohms)   (ohms)   (ohms)   (deg)            dB       dB
source =  1; node 16, sector 1
1.39     96.37    151.02   179.15   57.5     7.0375  -2.4853  -3.6076
```

FIGURE 6
WEGP MOMENT MODEL ARRAY SYNTHESIS
(DIRECTIONAL – NIGHT)

WEGP NIGHT

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.39 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.85	297.

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	979.206	67.1	8.066	6.1
16	1,250.16	350.8	6.23782	313.1

Sum of square of source currents = 207.941
Total power = 10,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00374865	-.00488871
Y(1, 2)	.00180775	-.000245187
Y(2, 1)	.00180774	-.000245214
Y(2, 2)	.00342611	-.00437985

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	85.5719	137.35
Z(1, 2)	11.3255	-51.8681
Z(2, 1)	11.3264	-51.8681
Z(2, 2)	96.2669	151.243

FIGURE 7
WEGP MOMENT MODEL SUMMARY FOR DIRECTIONAL NIGHT MODE

```
WEGP NIGHT

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

wire  caps Distance     Angle        Z            radius      segs
 1    none 0            0            0            .1819        15
           0            0            109.
 2    none 120.         60.          0            .2062        15
           120.         60.          111.5

Number of wires          =  2
          current nodes  =  30

                         minimum                  maximum
Individual wires      wire    value             wire  value
segment length         1      7.26667            2    7.43333
radius                 1      .1819              2    .2062


ELECTRICAL DESCRIPTION
Frequencies (MHz)
     frequency                no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   1.39         0             1      .0201852       .0206482

Sources
source node    sector  magnitude      phase          type
 1      1       1      1,384.81       67.1           voltage
 2      16      1      1,767.99       350.8          voltage



IMPEDANCE
   normalization = 50.
freq     resist   react    imped    phase    VSWR    S11      S12
(MHz)    (ohms)   (ohms)   (ohms)   (deg)            dB       dB
source =  1; node 1, sector 1
1.39     58.842   106.19   121.4    61.      5.683   -3.0889  -2.9331

source =  2; node 16, sector 1
1.39     158.61   122.51   200.42   37.7     5.1871  -3.3915  -2.6599
```

CURRENT rms
Frequency = 1.39 MHz
Input power = 10,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	8.06599	6.1	8.02092	.851491
2	0	0	7.26667	8.62726	3.9	8.60775	.579876
3	0	0	14.5333	8.88835	2.5	8.87956	.395189
4	0	0	21.8	8.97766	1.5	8.97446	.239903
5	0	0	29.0667	8.91238	.7	8.91174	.10738
6	0	0	36.3333	8.70109	360.	8.70109	-4.42E-03
7	0	0	43.6	8.35049	359.3	8.34994	-.0960329
8	0	0	50.8667	7.86743	358.8	7.86564	-.167521
9	0	0	58.1333	7.25963	358.3	7.25633	-.218804
10	0	0	65.4	6.53534	357.8	6.53056	-.249839
11	0	0	72.6667	5.70378	357.4	5.69782	-.260678
12	0	0	79.9333	4.77408	357.	4.76745	-.251474
13	0	0	87.2	3.75429	356.6	3.74769	-.222403
14	0	0	94.4667	2.6483	356.2	2.64261	-.173418
15	0	0	101.733	1.44677	355.9	1.44306	-.103479
END	0	0	109.	0	0	0	0
GND	60.	-103.923	0	6.23782	313.1	4.2639	-4.55298
17	60.	-103.923	7.43333	6.81002	306.9	4.09189	-5.4436
18	60.	-103.923	14.8667	7.12675	303.4	3.92735	-5.94697
19	60.	-103.923	22.3	7.29928	300.8	3.73799	-6.26952
20	60.	-103.923	29.7333	7.3371	298.7	3.52159	-6.43673
21	60.	-103.923	37.1667	7.24401	296.9	3.27897	-6.45942
22	60.	-103.923	44.6	7.02309	295.4	3.01229	-6.34428
23	60.	-103.923	52.0333	6.67817	294.1	2.7244	-6.09718
24	60.	-103.923	59.4667	6.21431	292.9	2.4186	-5.72434
25	60.	-103.923	66.9	5.63777	291.9	2.0984	-5.2327
26	60.	-103.923	74.3333	4.95573	290.9	1.76743	-4.62984
27	60.	-103.923	81.7667	4.17578	290.	1.42917	-3.9236
28	60.	-103.923	89.2	3.30479	289.2	1.08662	-3.12104
29	60.	-103.923	96.6333	2.34607	288.4	.741578	-2.22578
30	60.	-103.923	104.067	1.29121	287.7	.392333	-1.23016
END	60.	-103.923	111.5	0	0	0	0

FIGURE 8
DERIVED DIRECTIONAL PARAMETERS

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

NIGHT:

	Theoretical		Base Network Input Current		Normalized TCT	
Tower	**Field**	**Phase**	**Amplitude**	**Phase**	**Amplitude**	**Phase**
1 (SW)	1.000	0.0°	8.18	5.80°	1.292	53.1°
2 (NE)	.850	297.0°	6.33	-47.27°	1.000	0.0°

FIGURE 9
WEGP TOWER BASE CIRCUIT ANALYSIS DESCRIPTION

APPLICATION FOR LICENSE INFORMATION
EMPLOYING MOMENT METHOD MODELING
WEGP, 1390 KHZ, DA-N
PRESQUE ISLE, MAINE
SEPTEMBER, 2020

CIRCUIT ANALYSIS

Circuit Analysis was performed on each Tower of the WEGP model. "Phasetek" nodal Circuit Analysis program was used to compute base model Input/Output voltages and currents. For the Directional mode, the calculated Mininec Tower Base Drive Voltage was used to determine the Base Network Input Current. This point is the location of the Sampling TCT. "Z_1" represents the ATU Shunt impedance, "Z_2" represents the Tower Feed impedance, and "Z_3" represents the Tower Base Shunt impedance.

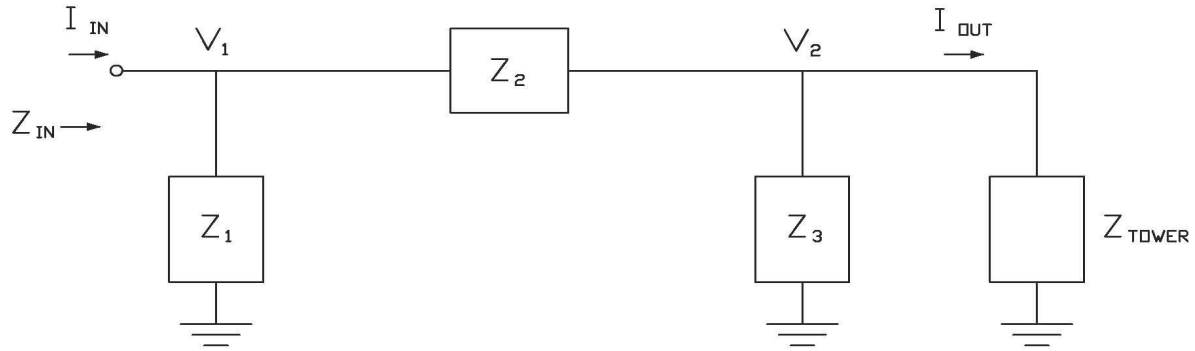


FIGURE 10
WEGP CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WEGP
NETWORK ID : TOWER 1 (OTHER OPEN)

FREQUENCY : 1390.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 5700.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 25.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-11450.00 OHMS
TOWER IMPEDANCE (R,X) : 85.62, 137.24 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	5700.00
2	GROUND	87.70	138.24
1	2	0.00	25.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	88.35	-4.14

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	82.87	159.94	180.13	62.61
INPUT CURRENT (AMPS) :	0.26	-0.49	0.56	-62.61
OUTPUT CURRENT (AMPS) :	0.25	-0.48	0.55	-62.19

INPUT/OUTPUT CURRENT RATIO = 1.0165
INPUT/OUTPUT PHASE = -0.42 DEGREES

FIGURE 10 CONTINUED
WEGP CIRCUIT ANALYSIS FOR INDIVIDUAL TOWERS

CUSTOMER : WEGP
NETWORK ID : TOWER 2 (OTHER OPEN)

FREQUENCY : 1390.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 5700.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 52.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7633.30 OHMS
TOWER IMPEDANCE (R,X) : 96.37, 151.02 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	5700.00
2	GROUND	100.28	152.78
1	2	0.00	52.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	100.00	0.00
2	80.15	-7.19

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	93.42	199.26	220.07	64.88
INPUT CURRENT (AMPS) :	0.19	-0.41	0.45	-64.88
OUTPUT CURRENT (AMPS) :	0.19	-0.40	0.45	-64.65

INPUT/OUTPUT CURRENT RATIO = 1.0157
INPUT/OUTPUT PHASE = -0.24 DEGREES

FIGURE 11
WEGP CIRCUIT ANALYSIS FOR DIRECTIONAL NIGHT MODE

CUSTOMER : WEGP
NETWORK ID : TOWER 1 NIGHT

FREQUENCY : 1390.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 5700.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 25.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00,-11450.00 OHMS
TOWER IMPEDANCE (R,X) : 58.84, 106.19 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	5700.00
2	GROUND	59.95	106.87
1	2	0.00	25.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	1157.58	71.94
2	979.21	67.10

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	57.26	129.48	141.58	66.14
INPUT CURRENT (AMPS) :	8.13	0.83	8.18	5.80
OUTPUT CURRENT (AMPS) :	8.02	0.86	8.07	6.09

INPUT/OUTPUT CURRENT RATIO = 1.0137
INPUT/OUTPUT PHASE = -0.29 DEGREES

FIGURE 11 CONTINUED
WEGP CIRCUIT ANALYSIS FOR DIRECTIONAL NIGHT MODE

CUSTOMER : WEGP
NETWORK ID : TOWER 2 NIGHT

FREQUENCY : 1390.00 kHz
ATU SHUNT IMPEDANCE (R,X) : 0.00, 5700.00 OHMS
TOWER FEED IMPEDANCE (R,X) : 0.00, 52.00 OHMS
TOWER SHUNT IMPEDANCE (R,X) : 0.00, -7633.30 OHMS
TOWER IMPEDANCE (R,X) : 158.61, 122.51 OHMS

NODE	TO NODE	IMPEDANCE (OHMS) R	X
1	GROUND	0.00	5700.00
2	GROUND	163.75	121.05
1	2	0.00	52.00

NODE	VOLTAGE MAGNITUDE	PHASE
1	1462.63	0.91
2	1250.16	350.80

	REAL	IMAGINARY	MAGNITUDE	PHASE
INPUT IMPEDANCE (OHMS) :	154.13	172.25	231.14	48.18
INPUT CURRENT (AMPS) :	4.29	-4.65	6.33	-47.27
OUTPUT CURRENT (AMPS) :	4.26	-4.55	6.24	-46.88

INPUT/OUTPUT CURRENT RATIO = 1.0144
INPUT/OUTPUT PHASE = -0.39 DEGREES

FIGURE 12
WEGP REFERENCE FIELD INTENSITY MEASUREMENTS
SEPTEMBER, 2020

WEGP NIGHT REFERENCE POINT MEASUREMENTS – AUGUST 14, 2020

					CO-ORD NAD27			
Radial		**Dist km**	**mV/m**	**Time**	**Deg**	**Min**	**Sec**	**Description**
60°	1	3.27	190	1744	N 46	40	08.5	Route 1 at 25 MPH sign
					W 68	00	47.9	
	2	3.42	147	1748	N 46	40	10.0	#25 University St.
					W 68	00	40.7	
	3	3.59	121	1751	N 46	40	13.1	End of drive, #47 University St.
					W 68	00	34.6	
227°	1	11.26	0.4	1843	N 46	35	06.3	W. Chapman Rd. at intersection
					W 68	09	29.4	
	2	11.60	0.46	1848	N 46	34	59.0	Dirt road at curve
					W 68	09	41.9	
	3	12.64	0.41	1855	N 46	34	35.9	Dirt road in woods
					W 68	10	17.1	
253°	1	5.02	1.75	1813	N 46	38	27.5	Carvell Rd.
					W 68	06	47.4	
	2	6.58	1.45	1827	N 46	38	12.8	Grendell Rd. at curve
					W 68	07	57.6	
	3	6.68	1.35	1831	N 46	38	13.3	Dirt road
					W 68	08	03.0	