MULTICULTURAL RADIO BROADCASTING LICENSEE, LLC
RADIO STATION WEXY
1520 KHZ 5 KW-D 0.8 KW-N U DA-N
WILTON MANORS, FL

AMENDMENT TO
APPLICATION FOR LICENSE
NOVEMBER 1, 2010

M DONALD CRAIN
TECHNICAL CONSULTANT
5 GREEN ACRES DRIVE
BOILING SPRINGS, SC 29316

MULTICULTURAL RADIO BROADCASTING LICENSEE, LLC
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TABLE OF CONTENTS

RADIO STATION WEXY
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Technical Summary Statement

This amended technical summary is in support of the WEXY night directional and non-directional day antenna system, as required by the FCC construction permit BP-20040109ABM granted March 22, 2007.

This construction permit authorizes operation at the existing transmitter location with 5 kW day with a non-directional antenna system using the existing north tower, and 0.8 kW night operating with a directional antenna using the existing two towers. No changes were made to the towers or ground system as specified in the existing station license and the application for construction permit. Operation of WEXY as described in this application is in compliance with the terms of the construction permit.

The information provided in this technical summary shows that the operating parameters for the night directional antenna pattern authorized by the construction permit have been determined in compliance with the requirements of section 73.151(c) of the FCC rules. The system is adjusted to antenna monitor parameters within +/- 5 percent in current ratio and +/- 3 degrees in phase of the Method of Moment Model values, as specified in the FCC Rules.

Method of Moments Model Stability Assessment information has been included as part of this amended application to verify the stability of the WEXY self supporting towers model.

The measurements and calculations contained in this technical summary for Radio Station WEXY were made under my direct supervision. All information contained in this report is true and correct to the best of my knowledge.

M Donald Crain

Digitally signed by M Donald Crain
DN: cn=M Donald Crain, o=M Donald Crain Inc, ou, email=w4oc@aol.com, c=US
Date: 2010.11.01 13:48:06 -04'00'

M. Donald Crain
5 Green Acres Drive
Boiling Springs, SC 29316
Telephone 864 599 1819

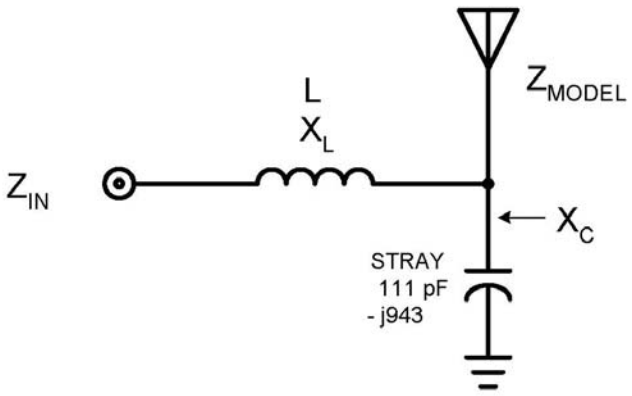
Section 1 - WEXY
Analysis of Measured Tower Impedance Data for Verification of Method of Moments Model

Tower base self impedance measurements were made at the output J-plugs inside of each Antenna Tuning Unit (ATU) with a HP model 8751A network analyzer system using an external directional coupler and power amplifier. The network analyzer system was calibrated with known standards prior to measurements. The other tower was open circuited at the output J-plug for this measurement.

The output J-plug in each ATU is located beside the toroid sampling transformer of the antenna monitor system at the output of each ATU enclosure. No components are in the circuit from this point to the tower other than static drain chokes which have very high impedance and no impact on the measured tower impedances. Circuit calculations were made to correlate the modeled base impedances (Z_{MODEL}) to the measured ATU output impedances ($Z_{IN(MEASURED)}$). The X_C value was used as a load at ground level in the open circuit unused tower for both tower self impedance models. The X_L value represents the tubing inductance between the ATU output J-plug and the tower connection point.

The measured and modeled base impedances at the ATU output J-plugs with the other tower open circuited at its ATU output J-plug agree within the FCC Rule requirement of +/- 2 ohms and +/- 4 percent for resistance and reactance.

The schematic and table below show assumed values, and the results of the WCAP circuit calculations that were used for correlation of the model data to measured data.



TOWER	L(uH)	X_L	X_C	Z_{MODEL}	Z_{IN} (MODEL)	Z_{IN} (MEASURED)
1	3.005	+ j28.7	-j 943	32.7 –j13.1	31.8 +j14.7	31.8 +j14.7
2	1.717	+ j16.4	-j 943	35.7 –j7.7	35.0 +j7.5	35.0 +j7.5

Section 2 - WEXY
Method of Moments Model and WCAP Calculation Details for Individual Tower Self Impedances

The WEXY array of towers was modeled using Expert MININEC Broadcast Professional Version 12.5. The WEXY towers are identical triangular self supporting structures that taper in side width from the base as the above ground height increases. Each tower was modeled using 10 wire segments, with each wire segment representing the average physical radius at the height of the center of that segment. The wire end points were specified using electrical degrees at 1520 kHz in the Geographic coordinate system with their locations taken from the theoretical directional antenna specifications. The towers are physically 86.8 degrees in height, thereby each segment length is 8.68 degrees. The segment radii are specified in meters.

Each tower model was adjusted individually to provide correlation of the model impedance - when corrected by WCAP circuit calculations for the additional stray capacitances and ATU to tower connection series inductances – to the measured ATU output J-plug impedances with the other tower open circuited at its ATU output J-plug. The capacitance of the large base insulator at ground level on each leg (3) is included in the value of stray capacitance used for WCAP circuit calculations.

The modeled height of each tower relative to its physical height is within the required 75 to 125 percent range and the modeled radius of each tower is within the required 80 to 150 percent of the circle radius having a circumference equal to the sum of the widths of the tower sides. The towers taper from a face width of 3.2195 meters at the bottom to a face width of 0.3759 meters at the top.

The wire segment model, when checked using the “problem definition evaluation” function, has no errors relative to the MININEC “geometry guidelines.”

The WEXY Table of Tower Physical and Model Dimensions on the following page shows each tower by section height and radius that was used in the model.

The WEXY Tower 1 Self Impedance Method of Moments Model Detail and the WEXY Tower 2 Self Impedance Method of Moments Model Detail on the following pages list the information used in the method of moments model for each tower with the other tower open circuited.

The WEXY Tower Self Impedance WCAP Detail on the following pages list the calculations used to correct for strays and other assumed loads for each tower driven with the other tower open circuited. For each WCAP tabulation, node 2 represents the Z_{IN} reference point, node 3 represents the tower feedpoint (Z_{MODEL}), and node 0 represents ground potential. R 1-2 is a phantom 1.0 ohm resistor that is included in series with the drive current source. R 3-0 is the complex tower impedance from the method of moments model. L 2-3 is the X_L inductance value. C 3-0 is the X_C stray capacitive reactance value used for calculations. The $Z_{IN(MODEL)}$ calculated impedances appear under the “TO NODE IMPEDANCE” columns of the WCAP tabulations.

WEXY Table of Tower Physical and Model Dimensions

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	8.68	9.405	108.35	1.4233	100
1-2	8.68	9.405	108.35	1.1957	100
1-3	8.68	9.405	108.35	0.9680	100
1-4	8.68	9.405	108.35	0.7403	100
1-5	8.68	9.405	108.35	0.5126	100
1-6	8.68	9.405	108.35	0.3645	100
1-7	8.68	9.405	108.35	0.3112	100
1-8	8.68	9.405	108.35	0.2733	100
1-9	8.68	9.405	108.35	0.2353	100
1-10	8.68	9.405	108.35	0.1974	100
1 - Overall	86.8	94.05	108.35		100
2-1	8.68	9.580	110.37	1.4233	100
2-2	8.68	9.580	110.37	1.1957	100
2-3	8.68	9.580	110.37	0.9680	100
2-4	8.68	9.580	110.37	0.7403	100
2-5	8.68	9.580	110.37	0.5126	100
2-6	8.68	9.580	110.37	0.3645	100
2-7	8.68	9.580	110.37	0.3112	100
2-8	8.68	9.580	110.37	0.2733	100
2-9	8.68	9.580	110.37	0.2353	100
2-10	8.68	9.580	110.37	0.1974	100
2 - Overall	86.8	95.80	110.37		100

WEXY Tower 1 Self Impedance Method of Moments Model Detail

C:\WEXY\WEXY T1 Self 10 seg 06-21-2010 23:00:11

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.52	32.73	-13.144	35.271	338.1	1.6993	-11.731	-.30175

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.52	0	1	.026125	.0266111

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	11	0	-943.	0	0	0

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4233	1
		0	0	9.405		
2	none	0	0	9.405	1.1957	1
		0	0	18.81		
3	none	0	0	18.81	.968	1
		0	0	28.215		
4	none	0	0	28.215	.7403	1
		0	0	37.62		
5	none	0	0	37.62	.5126	1
		0	0	47.025		
6	none	0	0	47.025	.3645	1
		0	0	56.43		
7	none	0	0	56.43	.3112	1
		0	0	65.835		
8	none	0	0	65.835	.2733	1
		0	0	75.24		
9	none	0	0	75.24	.2353	1
		0	0	84.645		
10	none	0	0	84.645	.1974	1
		0	0	94.05		
11	none	80.	340.	0	1.4233	1
		80.	340.	9.58		
12	none	80.	340.	9.58	1.1957	1
		80.	340.	19.16		
13	none	80.	340.	19.16	.968	1
		80.	340.	28.74		
14	none	80.	340.	28.74	.7403	1
		80.	340.	38.32		
15	none	80.	340.	38.32	.5126	1
		80.	340.	47.9		
16	none	80.	340.	47.9	.3645	1
		80.	340.	57.48		
17	none	80.	340.	57.48	.3112	1
		80.	340.	67.06		
18	none	80.	340.	67.06	.2733	1
		80.	340.	76.64		
19	none	80.	340.	76.64	.2353	1
		80.	340.	86.22		
20	none	80.	340.	86.22	.1974	1
		80.	340.	95.8		

Number of wires = 20
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	9.405	15	9.58
radius	10	.1974	1	1.4233

WEXY Tower 2 Self Impedance Method of Moments Model Detail

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 11, sector 1							
1.52	35.66	-7.6475	36.471	347.9	1.466	-14.472	-.15793

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.52	0	1	.026125	.0266111

Sources

source	node	sector	magnitude	phase	type
1	11	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-943.	0	0	0

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4233	1
		0	0	9.405		
2	none	0	0	9.405	1.1957	1
		0	0	18.81		
3	none	0	0	18.81	.968	1
		0	0	28.215		
4	none	0	0	28.215	.7403	1
		0	0	37.62		
5	none	0	0	37.62	.5126	1
		0	0	47.025		
6	none	0	0	47.025	.3645	1
		0	0	56.43		
7	none	0	0	56.43	.3112	1
		0	0	65.835		
8	none	0	0	65.835	.2733	1
		0	0	75.24		
9	none	0	0	75.24	.2353	1
		0	0	84.645		
10	none	0	0	84.645	.1974	1
		0	0	94.05		
11	none	80.	340.	0	1.4233	1
		80.	340.	9.58		
12	none	80.	340.	9.58	1.1957	1
		80.	340.	19.16		
13	none	80.	340.	19.16	.968	1
		80.	340.	28.74		
14	none	80.	340.	28.74	.7403	1
		80.	340.	38.32		
15	none	80.	340.	38.32	.5126	1
		80.	340.	47.9		
16	none	80.	340.	47.9	.3645	1
		80.	340.	57.48		
17	none	80.	340.	57.48	.3112	1
		80.	340.	67.06		
18	none	80.	340.	67.06	.2733	1
		80.	340.	76.64		
19	none	80.	340.	76.64	.2353	1
		80.	340.	86.22		
20	none	80.	340.	86.22	.1974	1
		80.	340.	95.8		

Number of wires = 20
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	9.405	15	9.58
radius	10	.1974	1	1.4233

WEXY
WCAP Calculation Details for Tower Self Impedance Other Towers Open Circuit

WEXY Tower 1 Driven – Tower 2 Open Circuit

```
WESTBERG CIRCUIT ANALYSIS PROGRAM


 FILE NAME = WEXY1OC.txt

 I     1.0000    0    1     .0000     .0000     .0000
 R     1.0000    1    2     .0000     .0000     .0000
 L     3.0050    2    3     .0000     .0000     .0000
 C      .0001    3    0     .0000     .0000     .0000
 R    32.7300    3    0  -13.1440     .0000     .0000
 EX     .0000    0    0     .0000     .0000     .0000


 FREQ = 1.520

   NODE      VOLT MAG     VOLT PHASE
    1        35.9214        24.0646
    2        35.0107        24.7319
    3        34.7656       -23.8397
                          BRANCH VOLTAGE       BRANCH CURRENT FROM NODE IMPEDANCE  TO NODE IMPEDANCE
                          MAG      PHASE       MAG      PHASE RESISTANCE REACTANCE RESISTANCE REACTANCE
 VSWR
 R    1-  2     1.000      1.00      .000      1.00      .000     32.80     14.65     31.80     14.65
 L    2-  3     3.005     28.70    90.000      1.00      .000     31.80     14.65     31.80    -14.05
 C    3-  0      .000     34.77   -23.840       .04    66.160       .00   -943.31       .00       .00
 R    3-  0    32.730     34.77   -23.840       .99    -1.960     32.73    -13.14       .00       .00
```

WEXY Tower 2 Driven –Tower 1 Open Circuit

```
WESTBERG CIRCUIT ANALYSIS PROGRAM


 FILE NAME = WEXY2OC.txt

 I     1.0000    0    1     .0000     .0000     .0000
 R     1.0000    1    2     .0000     .0000     .0000
 L     1.7170    2    3     .0000     .0000     .0000
 C      .0001    3    0     .0000     .0000     .0000
 R    35.6600    3    0   -7.6475     .0000     .0000
 EX     .0000    0    0     .0000     .0000     .0000


 FREQ = 1.520

   NODE      VOLT MAG     VOLT PHASE
    1        36.8112        11.7529
    2        35.8328        12.0786
    3        36.1521       -14.2516
                          BRANCH VOLTAGE       BRANCH CURRENT FROM NODE IMPEDANCE  TO NODE IMPEDANCE
                          MAG      PHASE       MAG      PHASE RESISTANCE REACTANCE RESISTANCE REACTANCE
 VSWR
 R    1-  2     1.000      1.00      .000      1.00      .000     36.04      7.50     35.04      7.50
 L    2-  3     1.717     16.40    90.000      1.00      .000     35.04      7.50     35.04     -8.90
 C    3-  0      .000     36.15   -14.252       .04    75.748       .00   -943.31       .00       .00
 R    3-  0    35.660     36.15   -14.252       .99    -2.148     35.66     -7.65       .00       .00
```

Section 3 - WEXY
Method of Moments Model Details for Model Stability Assessment

The WEXY array of towers was modeled using Expert MININEC Broadcast Professional Version 12.5. The WEXY towers are identical triangular self supporting structures that taper in side width from the base as the above ground height increases. Each tower was originally modeled using 10 wire segments, with each wire segment representing the average physical radius at the height of the center of that segment. The wire end points were specified using electrical degrees at 1520 kHz in the Geographic coordinate system with their locations taken from the theoretical directional antenna specifications. The towers are physically 86.8 degrees in height, thereby each segment length is 8.68 degrees. The segment radii are specified in meters.

Each 10 segment tower model was adjusted individually to provide correlation of the model impedance - when corrected by circuit calculations for the additional stray capacitances and ATU to tower connection series inductances – to the measured ATU output J-plug impedances with the other tower open circuited at its ATU output J-plug. The capacitance of the large base insulator at ground level on each leg (3) is included in the value of stray capacitance used for circuit calculations.

Each tower was then modeled with different numbers of segments with the same overall height as the 10 segment model to demonstrate the stability of the model relative to the resistance and reactance with variable segment length to radius ratio. The radius used in each of these model segments is represented by the average physical radius at the height of the center of that segment.

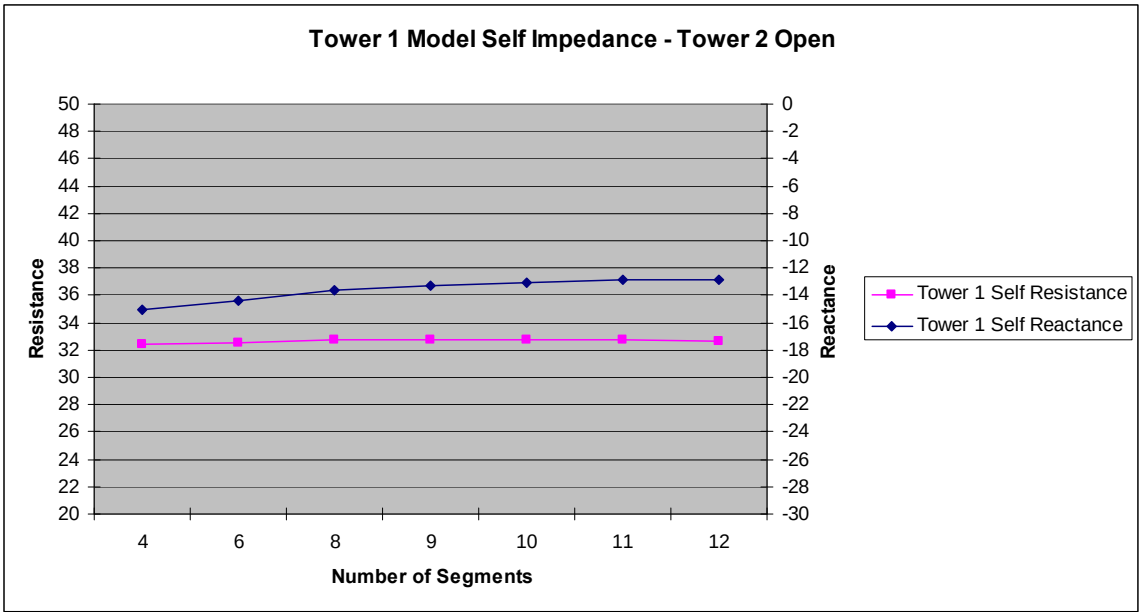
All wire segment models, when checked using the “problem definition evaluation” function, have no errors relative to the MININEC “geometry guidelines.” MININEC Broadcast Professional does show warnings due to the segment length to radius ratio on some of the segments used. This study was performed to determine the stability of the model relative to the segment length to radius ratio with the overall height held constant. It is shown in this study that both the real and imaginary components of the base impedance converge as the segment length is shortened, and remain essentially constant with the variations well below the required measurement tolerances through the range of segment length to radius ratios in the study. The model is therefore valid with regard to the characteristics of the self-supporting tower as an antenna.

The WEXY Model Stability Assessment Graphs and Data Tables for Tower 1 with Tower 2 open circuited and the WEXY Model Stability Assessment Graphs and Data Tables for Tower 2 with Tower 1 open circuited shows the modeled self resistance and reactance with the varying segment lengths and radius used in each case.

The WEXY Table of Tower Physical and Model Dimensions for Model Stability Assessment on the following page shows each tower by segment height and radius that was used in each model.

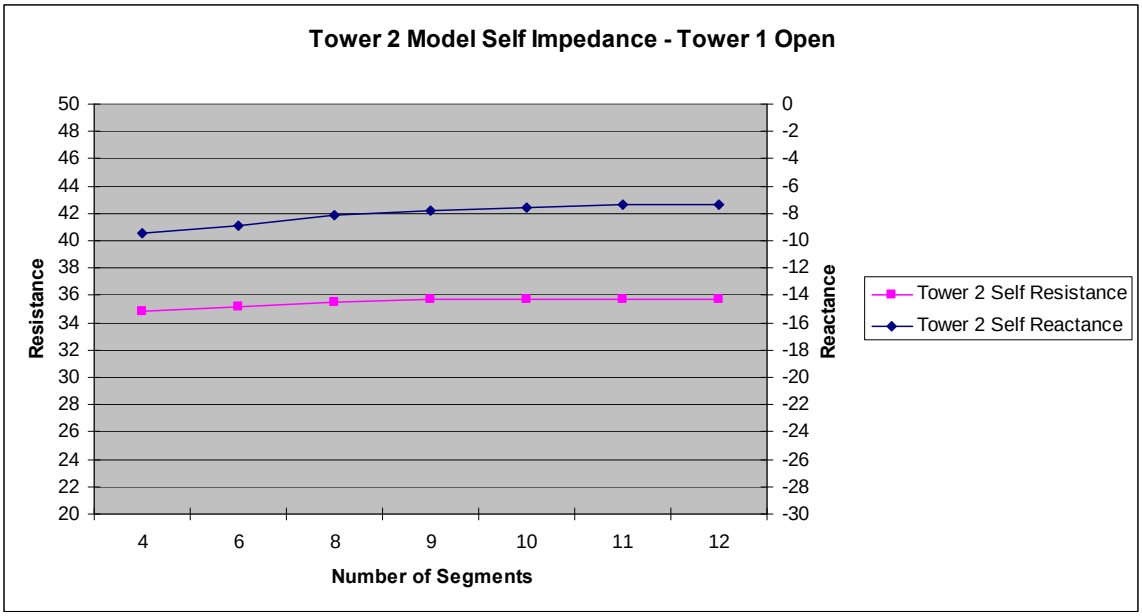
The WEXY Tower 1 Self Impedance Method of Moments Model Detail for Model Stability Assessment on the following pages lists the information used in the method of moments model for Tower 1 with the Tower 2 open circuited.

WEXY Model Stability Assessment
Graphs and Data Tables
Resistance and Reactance
4 to 12 Segment Models
Tower 1 Self Impedance – Tower 2 Open Circuit



Number of Segments	Tower 1 Self Resistance (Ohms)	Tower 1 Self Reactance (Ohms)
4	32.39	-15.1
6	32.55	-14.4
8	32.71	-13.6
9	32.77	-13.3
10	32.73	-13.1
11	32.76	-12.9
12	32.69	-12.9

WEXY Model Stability Assessment
Graphs and Data Tables
Resistance and Reactance
4 to 12 Segment Models
Tower 2 Self Impedance – Tower 1 Open Circuit



Number of Segments	Tower 2 Self Resistance (Ohms)	Tower 2 Self Reactance (Ohms)
4	34.81	-9.5
6	35.20	-8.9
8	35.53	-8.1
9	35.66	-7.8
10	35.66	-7.6
11	35.74	-7.4
12	35.72	-7.4

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
4 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	21.70	23.5125	108.35	1.2526	100
1-2	21.70	23.5125	108.35	0.5885	100
1-3	21.70	23.5125	108.35	0.3208	100
1-4	21.70	23.5125	108.35	0.2258	100
1 - Overall	86.8	94.05	108.35		100
2-1	21.70	23.5125	110.37	1.2526	100
2-2	21.70	23.5125	110.37	0.5885	100
2-3	21.70	23.5125	110.37	0.3208	100
2-4	21.70	23.5125	110.37	0.2258	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
6 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	14.46666	15.675	108.35	1.3474	100
1-2	14.46666	15.675	108.35	0.9680	100
1-3	14.46666	15.675	108.35	0.5885	100
1-4	14.46666	15.675	108.35	0.3365	100
1-5	14.46666	15.675	108.35	0.2733	100
1-6	14.46666	15.675	108.35	0.2100	100
1 - Overall	86.8	94.05	108.35		100
2-1	14.46666	15.96666	110.37	1.3474	100
2-2	14.46666	15.96666	110.37	0.9680	100
2-3	14.46666	15.96666	110.37	0.5885	100
2-4	14.46666	15.96666	110.37	0.3365	100
2-5	14.46666	15.96666	110.37	0.2733	100
2-6	14.46666	15.96666	110.37	0.2100	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
8 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	10.85	11.75625	108.35	1.3951	100
1-2	10.85	11.75625	108.35	1.1105	100
1-3	10.85	11.75625	108.35	0.8259	100
1-4	10.85	11.75625	108.35	0.5413	100
1-5	10.85	11.75625	108.35	0.3445	100
1-6	10.85	11.75625	108.35	0.2970	100
1-7	10.85	11.75625	108.35	0.2496	100
1-8	10.85	11.75625	108.35	0.2022	100
1 - Overall	86.8	94.05	108.35		100
2-1	10.85	11.975	110.37	1.3951	100
2-2	10.85	11.975	110.37	1.1105	100
2-3	10.85	11.975	110.37	0.8259	100
2-4	10.85	11.975	110.37	0.5413	100
2-5	10.85	11.975	110.37	0.3445	100
2-6	10.85	11.975	110.37	0.2970	100
2-7	10.85	11.975	110.37	0.2496	100
2-8	10.85	11.975	110.37	0.2022	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
9 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	9.6444	10.45	108.35	1.4107	100
1-2	9.6444	10.45	108.35	1.1577	100
1-3	9.6444	10.45	108.35	0.9047	100
1-4	9.6444	10.45	108.35	0.6518	100
1-5	9.6444	10.45	108.35	0.3988	100
1-6	9.6444	10.45	108.35	0.3260	100
1-7	9.6444	10.45	108.35	0.2838	100
1-8	9.6444	10.45	108.35	0.2416	100
1-9	9.6444	10.45	108.35	0.1995	100
1 - Overall	86.8	94.05	108.35		100
2-1	9.6444	10.6444	110.37	1.4107	100
2-2	9.6444	10.6444	110.37	1.1577	100
2-3	9.6444	10.6444	110.37	0.9047	100
2-4	9.6444	10.6444	110.37	0.6518	100
2-5	9.6444	10.6444	110.37	0.3988	100
2-6	9.6444	10.6444	110.37	0.3260	100
2-7	9.6444	10.6444	110.37	0.2838	100
2-8	9.6444	10.6444	110.37	0.2416	100
2-9	9.6444	10.6444	110.37	0.1995	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
10 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	8.68	9.405	108.35	1.4233	100
1-2	8.68	9.405	108.35	1.1957	100
1-3	8.68	9.405	108.35	0.9680	100
1-4	8.68	9.405	108.35	0.7403	100
1-5	8.68	9.405	108.35	0.5126	100
1-6	8.68	9.405	108.35	0.3645	100
1-7	8.68	9.405	108.35	0.3112	100
1-8	8.68	9.405	108.35	0.2733	100
1-9	8.68	9.405	108.35	0.2353	100
1-10	8.68	9.405	108.35	0.1974	100
1 - Overall	86.8	94.05	108.35		100
2-1	8.68	9.580	110.37	1.4233	100
2-2	8.68	9.580	110.37	1.1957	100
2-3	8.68	9.580	110.37	0.9680	100
2-4	8.68	9.580	110.37	0.7403	100
2-5	8.68	9.580	110.37	0.5126	100
2-6	8.68	9.580	110.37	0.3645	100
2-7	8.68	9.580	110.37	0.3112	100
2-8	8.68	9.580	110.37	0.2733	100
2-9	8.68	9.580	110.37	0.2353	100
2-10	8.68	9.580	110.37	0.1974	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
11 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	7.891	8.550	108.35	1.4337	100
1-2	7.891	8.550	108.35	1.2267	100
1-3	7.891	8.550	108.35	1.0197	100
1-4	7.891	8.550	108.35	0.8127	100
1-5	7.891	8.550	108.35	0.6058	100
1-6	7.891	8.550	108.35	0.3988	100
1-7	7.891	8.550	108.35	0.3364	100
1-8	7.891	8.550	108.35	0.2991	100
1-9	7.891	8.550	108.35	0.2646	100
1-10	7.891	8.550	108.35	0.2301	100
1-11	7.891	8.550	108.35	0.1957	100
1 - Overall	86.8	94.05	108.35		100
2-1	7.891	8.7091	110.37	1.4337	100
2-2	7.891	8.7091	110.37	1.2267	100
2-3	7.891	8.7091	110.37	1.0197	100
2-4	7.891	8.7091	110.37	0.8127	100
2-5	7.891	8.7091	110.37	0.6058	100
2-6	7.891	8.7091	110.37	0.3988	100
2-7	7.891	8.7091	110.37	0.3364	100
2-8	7.891	8.7091	110.37	0.2991	100
2-9	7.891	8.7091	110.37	0.2646	100
2-10	7.891	8.7091	110.37	0.2301	100
2-11	7.891	8.7091	110.37	0.1957	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Table of Tower Physical and Model Dimensions
12 Segments

TOWER SEGMENT	Physical Height (degrees)	Model Height (degrees)	Model Percent of Height	Model Radius (meters)	Percent Equivalent Radius
1-1	7.2333	7.8375	108.35	1.4423	100
1-2	7.2333	7.8375	108.35	1.2526	100
1-3	7.2333	7.8375	108.35	1.0628	100
1-4	7.2333	7.8375	108.35	0.8731	100
1-5	7.2333	7.8375	108.35	0.6834	100
1-6	7.2333	7.8375	108.35	0.4936	100
1-7	7.2333	7.8375	108.35	0.3523	100
1-8	7.2333	7.8375	108.35	0.3207	100
1-9	7.2333	7.8375	108.35	0.2891	100
1-10	7.2333	7.8375	108.35	0.2575	100
1-11	7.2333	7.8375	108.35	0.2258	100
1-12	7.2333	7.8375	108.35	0.1920	100
1 - Overall	86.8	94.05	108.35		100
2-1	7.2333	7.9833	110.37	1.4423	100
2-2	7.2333	7.9833	110.37	1.2526	100
2-3	7.2333	7.9833	110.37	1.0628	100
2-4	7.2333	7.9833	110.37	0.8731	100
2-5	7.2333	7.9833	110.37	0.6834	100
2-6	7.2333	7.9833	110.37	0.4936	100
2-7	7.2333	7.9833	110.37	0.3523	100
2-8	7.2333	7.9833	110.37	0.3207	100
2-9	7.2333	7.9833	110.37	0.2891	100
2-10	7.2333	7.9833	110.37	0.2575	100
2-11	7.2333	7.9833	110.37	0.2258	100
2-12	7.2333	7.9833	110.37	0.1920	100
2 - Overall	86.8	95.80	110.37		100

WEXY Model Stability Assessment
Method of Moments Model Detail
4 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.2526	1
		0	0	23.5125		
2	none	0	0	23.5125	.5885	1
		0	0	47.025		
3	none	0	0	47.025	.3208	1
		0	0	70.5375		
4	none	0	0	70.5375	.2258	1
		0	0	94.05		
5	none	80.	340.	0	1.2526	1
		80.	340.	23.95		
6	none	80.	340.	23.95	.5885	1
		80.	340.	47.9		
7	none	80.	340.	47.9	.3208	1
		80.	340.	71.85		
8	none	80.	340.	71.85	.2258	1
		80.	340.	95.8		

Number of wires = 8
current nodes = 8

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	3	23.5125	8	23.95
radius	4	.2258	1	1.2526

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.52	0	1	.0653125	.0665278

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	5	0	-943.	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							
1.52	32.387	-15.123	35.744	335.	1.7668	-11.146	-.34709

WEXY Model Stability Assessment
Method of Moments Model Detail
6 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.3474	1
		0	0	15.675		
2	none	0	0	15.675	.968	1
		0	0	31.35		
3	none	0	0	31.35	.5885	1
		0	0	47.025		
4	none	0	0	47.025	.3365	1
		0	0	62.7		
5	none	0	0	62.7	.2733	1
		0	0	78.375		
6	none	0	0	78.375	.21	1
		0	0	94.05		
7	none	80.	340.	0	1.3474	1
		80.	340.	15.966		
8	none	80.	340.	15.966	.968	1
		80.	340.	31.933		
9	none	80.	340.	31.933	.5885	1
		80.	340.	47.899		
10	none	80.	340.	47.899	.3365	1
		80.	340.	63.865		
11	none	80.	340.	63.865	.2733	1
		80.	340.	79.831		
12	none	80.	340.	79.831	.21	1
		80.	340.	95.8		

Number of wires = 12
current nodes = 12

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	15.675	12	15.969
radius	6	.21	1	1.3474

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.52	0	1	.0435417	.0443583

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	7	0	-943.	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							
1.52	32.547	-14.397	35.589	336.1	1.7398	-11.372	-.32875

WEXY Model Stability Assessment
Method of Moments Model Detail
8 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.3951	1
		0	0	11.7563		
2	none	0	0	11.7563	1.1105	1
		0	0	23.5125		
3	none	0	0	23.5125	.8259	1
		0	0	35.2688		
4	none	0	0	35.2688	.5413	1
		0	0	47.025		
5	none	0	0	47.025	.3445	1
		0	0	58.7814		
6	none	0	0	58.7814	.297	1
		0	0	70.5375		
7	none	0	0	70.5375	.2496	1
		0	0	82.294		
8	none	0	0	82.294	.2022	1
		0	0	94.05		
9	none	80.	340.	0	1.3951	1
		80.	340.	11.975		
10	none	80.	340.	11.975	1.1105	1
		80.	340.	23.95		
11	none	80.	340.	23.95	.8259	1
		80.	340.	35.925		
12	none	80.	340.	35.925	.5413	1
		80.	340.	47.9		
13	none	80.	340.	47.9	.3445	1
		80.	340.	59.875		
14	none	80.	340.	59.875	.297	1
		80.	340.	71.85		
15	none	80.	340.	71.85	.2496	1
		80.	340.	83.825		
16	none	80.	340.	83.825	.2022	1
		80.	340.	95.8		

Number of wires = 16
current nodes = 16

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	11.756	16	11.975
radius	8	.2022	1	1.3951

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.52	0	1	.0326556	.0332639

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	9	0	-943.	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							
1.52	32.714	-13.644	35.445	337.4	1.7126	-11.611	-.31054

WEXY Model Stability Assessment
Method of Moments Model Detail
9 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4107	1
		0	0	10.45		
2	none	0	0	10.45	1.1577	1
		0	0	20.9		
3	none	0	0	20.9	.9047	1
		0	0	31.35		
4	none	0	0	31.35	.6518	1
		0	0	41.8		
5	none	0	0	41.8	.3988	1
		0	0	52.25		
6	none	0	0	52.25	.326	1
		0	0	62.7		
7	none	0	0	62.7	.2838	1
		0	0	73.15		
8	none	0	0	73.15	.2416	1
		0	0	83.6		
9	none	0	0	83.6	.1995	1
		0	0	94.05		
10	none	80.	340.	0	1.4107	1
		80.	340.	10.6444		
11	none	80.	340.	10.6444	1.1577	1
		80.	340.	21.2889		
12	none	80.	340.	21.2889	.9047	1
		80.	340.	31.9333		
13	none	80.	340.	31.9333	.6518	1
		80.	340.	42.5778		
14	none	80.	340.	42.5778	.3988	1
		80.	340.	53.2222		
15	none	80.	340.	53.2222	.326	1
		80.	340.	63.8667		
16	none	80.	340.	63.8667	.2838	1
		80.	340.	74.5111		
17	none	80.	340.	74.5111	.2416	1
		80.	340.	85.1556		
18	none	80.	340.	85.1556	.1995	1
		80.	340.	95.8		

Number of wires = 18
current nodes = 18

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	8	10.45	11	10.6445
radius	9	.1995	1	1.4107

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.52	0	1	.0290278	.0295681

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	10	0	-943.	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							
1.52	32.77	-13.339	35.381	337.9	1.7023	-11.704	-.30374

WEXY Model Stability Assessment
Method of Moments Model Detail
10 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4233	1
		0	0	9.405		
2	none	0	0	9.405	1.1957	1
		0	0	18.81		
3	none	0	0	18.81	.968	1
		0	0	28.215		
4	none	0	0	28.215	.7403	1
		0	0	37.62		
5	none	0	0	37.62	.5126	1
		0	0	47.025		
6	none	0	0	47.025	.3645	1
		0	0	56.43		
7	none	0	0	56.43	.3112	1
		0	0	65.835		
8	none	0	0	65.835	.2733	1
		0	0	75.24		
9	none	0	0	75.24	.2353	1
		0	0	84.645		
10	none	0	0	84.645	.1974	1
		0	0	94.05		
11	none	80.	340.	0	1.4233	1
		80.	340.	9.58		
12	none	80.	340.	9.58	1.1957	1
		80.	340.	19.16		
13	none	80.	340.	19.16	.968	1
		80.	340.	28.74		
14	none	80.	340.	28.74	.7403	1
		80.	340.	38.32		
15	none	80.	340.	38.32	.5126	1
		80.	340.	47.9		
16	none	80.	340.	47.9	.3645	1
		80.	340.	57.48		
17	none	80.	340.	57.48	.3112	1
		80.	340.	67.06		
18	none	80.	340.	67.06	.2733	1
		80.	340.	76.64		
19	none	80.	340.	76.64	.2353	1
		80.	340.	86.22		
20	none	80.	340.	86.22	.1974	1
		80.	340.	95.8		

Number of wires = 20
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	9.405	15	9.58
radius	10	.1974	1	1.4233

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1.52	0	1	.026125	.0266111

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	11	0	-943.	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							
1.52	32.73	-13.144	35.271	338.1	1.6993	-11.731	-.30175

WEXY Model Stability Assessment
Method of Moments Model Detail
11 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4337	1
		0	0	8.55		
2	none	0	0	8.55	1.2267	1
		0	0	17.1		
3	none	0	0	17.1	1.0197	1
		0	0	25.65		
4	none	0	0	25.65	.8127	1
		0	0	34.2		
5	none	0	0	34.2	.6058	1
		0	0	42.75		
6	none	0	0	42.75	.3988	1
		0	0	51.3		
7	none	0	0	51.3	.3364	1
		0	0	59.85		
8	none	0	0	59.85	.2991	1
		0	0	68.4		
9	none	0	0	68.4	.2646	1
		0	0	76.95		
10	none	0	0	76.95	.2301	1
		0	0	85.5		
11	none	0	0	85.5	.1957	1
		0	0	94.05		
12	none	80.	340.	0	1.4337	1
		80.	340.	8.7091		
13	none	80.	340.	8.7091	1.2267	1
		80.	340.	17.4182		
14	none	80.	340.	17.4182	1.0197	1
		80.	340.	26.1273		
15	none	80.	340.	26.1273	.8127	1
		80.	340.	34.8364		
16	none	80.	340.	34.8364	.6058	1
		80.	340.	43.5455		
17	none	80.	340.	43.5455	.3988	1
		80.	340.	52.2545		
18	none	80.	340.	52.2545	.3364	1
		80.	340.	60.9636		
19	none	80.	340.	60.9636	.2991	1
		80.	340.	69.6727		
20	none	80.	340.	69.6727	.2646	1
		80.	340.	78.3818		
21	none	80.	340.	78.3818	.2301	1
		80.	340.	87.0909		
22	none	80.	340.	87.0909	.1957	1
		80.	340.	95.8		

Number of wires = 22
current nodes = 22

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	7	8.55	22	8.70911
radius	11	.1957	1	1.4337

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.52	0	1	.02375	.024192

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	12	0	-943.	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							
1.52	32.758	-12.937	35.22	338.5	1.693	-11.79	-.29757

WEXY Model Stability Assessment
Method of Moments Model Detail
12 Segment Model
Tower 1 Self Impedance – Tower 2 Open Circuit

C:\WEXY\WEXY T1 Self 12 seg 07-06-2010 15:37:58

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4423	1
		0	0	7.8375		
2	none	0	0	7.8375	1.2526	1
		0	0	15.675		
3	none	0	0	15.675	1.0628	1
		0	0	23.5125		
4	none	0	0	23.5125	.8731	1
		0	0	31.35		
5	none	0	0	31.35	.6834	1
		0	0	39.1875		
6	none	0	0	39.1875	.4936	1
		0	0	47.025		
7	none	0	0	47.025	.3523	1
		0	0	54.8625		
8	none	0	0	54.8625	.3207	1
		0	0	62.7		
9	none	0	0	62.7	.2891	1
		0	0	70.5375		
10	none	0	0	70.5375	.2575	1
		0	0	78.375		
11	none	0	0	78.375	.2258	1
		0	0	86.2125		
12	none	0	0	86.2125	.192	1
		0	0	94.05		
13	none	80.	340.	0	1.4423	1
		80.	340.	7.9833		
14	none	80.	340.	7.9833	1.2526	1
		80.	340.	15.966		
15	none	80.	340.	15.966	1.0628	1
		80.	340.	23.9499		
16	none	80.	340.	23.9499	.8731	1
		80.	340.	31.9332		
17	none	80.	340.	31.9332	.6834	1
		80.	340.	39.9165		
18	none	80.	340.	39.9165	.4936	1
		80.	340.	47.8998		
19	none	80.	340.	47.8998	.3523	1
		80.	340.	55.8831		
20	none	80.	340.	55.8831	.3207	1
		80.	340.	63.8664		
21	none	80.	340.	63.8664	.2891	1
		80.	340.	71.8497		
22	none	80.	340.	71.8497	.2575	1
		80.	340.	79.833		
23	none	80.	340.	79.833	.2258	1
		80.	340.	87.8163		
24	none	80.	340.	87.8163	.192	1
		80.	340.	95.8		

Number of wires = 24
current nodes = 24

Individual wires	minimum wire	minimum value	maximum wire	maximum value
segment length	7	7.8375	15	7.9839
radius	12	.192	1	1.4423

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.52	0	1	.0217708	.0221775

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	13	0	-943.	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							
1.52	32.694	-12.888	35.142	338.5	1.6948	-11.773	-.29874

Section 4 - WEXY
Computation of Operating Parameters for Night Directional Antenna

The method of moments model of the WEXY antenna array was used for directional antenna calculations after verification of the model with the open circuit base impedance data. The complex voltage values needed at the sources located at ground level at the base of each tower to produce the current moment sums, when normalized, that are equal to the theoretical field parameters were calculated. The tower currents were then calculated from these voltage sources. The currents which are sampled by the antenna monitor system at the ATU output J-plugs were calculated with WCAP from the method of moments directional antenna model results using the same values of stray shunt capacitance and series inductance as used in the single tower open WCAP calculations. The antenna monitor sampling lines and sampling transformers are electrically identical, and therefore the antenna monitor parameters needed to produce the theoretical antenna parameters can be calculated directly from the modeled ATU output J-plug currents.

TOWER	Model Current Pulse	Model Current Magnitude (amperes)	Model Current Phase (degrees)	Model Drive Impedance (ohms)	Model Drive Power (watts)
1	1	3.74	+9.8	45.6 +j9.5	638
2	11	3.57	+114.4	12.7 –j22.8	162

TOWER	Drive Impedance At Toroid (ohms)	Current Magnitude At Toroid (amperes)	Current Phase At Toroid (degrees)	Antenna Monitor Ratio	Antenna Monitor Phase
1	46.5 +j36.0	3.71	+12.598	100.0	0
2	12.1 –j6.0	3.66	+115.152	98.7	+102.6

Section 5 - WEXY
Method of Moments Model and WCAP Calculation Details for Night Directional Antenna

The WEXY array of towers was modeled using Expert MININEC Broadcast Professional Version 12.5 using the individual tower characteristic information that was verified by the impedance measurements of each tower with the other tower open circuited at its ATU output J-plug. With this data, calculations were made to derive the complex voltage values for the source located at ground level under each tower of the array to produce the current moment sums, when normalized, that are equal to the theoretical field parameters were calculated.

The WEXY Night Directional Method of Moments Model Detail on the following pages list the information used in the method of moments model for the WEXY Night directional antenna.

The WEXY Night Directional WCAP Calculations Detail on the following pages list the information used in the WCAP circuit calculations for the WEXY Night directional antenna.

TOWER	WIRE	BASE NODE
1	1	1
2	11	11

WEXY Night Directional Method of Moments Model Detail

C:\WEXY\WEXY Night 10 seg 07-02-2010 15:47:04

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.52 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.84	111.

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	174.337	21.5	3.74014	9.8
11	93.0089	53.5	3.56999	114.4

Sum of square of source currents = 53.467
Total power = 800. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.0342433	-.00674604
Y(1, 2)	-.0186788	.0169344
Y(2, 1)	-.0186783	.0169356
Y(2, 2)	.0315596	-.011937

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	33.4891	-13.1168
Z(1, 2)	19.6972	-18.2839
Z(2, 1)	19.6977	-18.2826
Z(2, 2)	36.4143	-7.61744

ELECTRICAL DESCRIPTION

Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.52	0	1	.026125	.0266111

Sources

source	node	sector	magnitude	phase	type
1	1	1	246.55	21.5	voltage
2	11	1	131.534	53.5	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							
1.52	45.639	9.4754	46.612	11.7	1.2435	-19.289	-5.1E-02
source = 2; node 11, sector 1							
1.52	12.677	-22.761	26.053	299.1	4.8069	-3.6674	-2.4396

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

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	1.4233	1
		0	0	9.405		
2	none	0	0	9.405	1.1957	1
		0	0	18.81		
3	none	0	0	18.81	.968	1
		0	0	28.215		
4	none	0	0	28.215	.7403	1
		0	0	37.62		
5	none	0	0	37.62	.5126	1
		0	0	47.025		
6	none	0	0	47.025	.3645	1
		0	0	56.43		
7	none	0	0	56.43	.3112	1
		0	0	65.835		
8	none	0	0	65.835	.2733	1
		0	0	75.24		
9	none	0	0	75.24	.2353	1
		0	0	84.645		
10	none	0	0	84.645	.1974	1
		0	0	94.05		
11	none	80.	340.	0	1.4233	1
		80.	340.	9.58		
12	none	80.	340.	9.58	1.1957	1
		80.	340.	19.16		
13	none	80.	340.	19.16	.968	1
		80.	340.	28.74		
14	none	80.	340.	28.74	.7403	1
		80.	340.	38.32		
15	none	80.	340.	38.32	.5126	1
		80.	340.	47.9		
16	none	80.	340.	47.9	.3645	1
		80.	340.	57.48		
17	none	80.	340.	57.48	.3112	1
		80.	340.	67.06		
18	none	80.	340.	67.06	.2733	1
		80.	340.	76.64		
19	none	80.	340.	76.64	.2353	1
		80.	340.	86.22		
20	none	80.	340.	86.22	.1974	1
		80.	340.	95.8		

Number of wires = 20
current nodes = 20

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	4	9.405	15	9.58
radius	10	.1974	1	1.4233

CURRENT rms
Frequency = 1.52 MHz
Input power = 800. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
1	0	0	0	3.74015	9.8	3.68547	.637222
END	0	0	9.405	3.79497	3.4	3.78843	.222823
2J1	0	0	9.405	3.79497	3.4	3.78843	.222823
END	0	0	18.81	3.6776	1.3	3.67665	.0834626
2J2	0	0	18.81	3.6776	1.3	3.67665	.0834626
END	0	0	28.215	3.45665	359.7	3.4566	-.0177637
2J3	0	0	28.215	3.45665	359.7	3.4566	-.0177637
END	0	0	37.62	3.14695	358.5	3.14589	-.0816128
2J4	0	0	37.62	3.14695	358.5	3.14589	-.0816128
END	0	0	47.025	2.77893	357.6	2.77651	-.115875
2J5	0	0	47.025	2.77893	357.6	2.77651	-.115875
END	0	0	56.43	2.36062	356.9	2.35715	-.128111
2J6	0	0	56.43	2.36062	356.9	2.35715	-.128111
END	0	0	65.835	1.87198	356.3	1.86798	-.122206
2J7	0	0	65.835	1.87198	356.3	1.86798	-.122206
END	0	0	75.24	1.32074	355.7	1.31701	-.0992247
2J8	0	0	75.24	1.32074	355.7	1.31701	-.0992247
END	0	0	84.645	.7149	355.2	.712367	-.0601308
2J9	0	0	84.645	.7149	355.2	.712367	-.0601308
END	0	0	94.05	0	0	0	0
11	75.1754	27.3616	0	3.56999	114.4	-1.47503	3.25101
END	75.1754	27.3616	9.58	3.31338	112.4	-1.26412	3.06275
2J11	75.1754	27.3616	9.58	3.31338	112.4	-1.26412	3.06275
END	75.1754	27.3616	19.16	3.1055	111.7	-1.14615	2.88626
2J12	75.1754	27.3616	19.16	3.1055	111.7	-1.14615	2.88626
END	75.1754	27.3616	28.74	2.8396	111.	-1.01726	2.65113
2J13	75.1754	27.3616	28.74	2.8396	111.	-1.01726	2.65113
END	75.1754	27.3616	38.32	2.52925	110.4	-.882879	2.37015
2J14	75.1754	27.3616	38.32	2.52925	110.4	-.882879	2.37015
END	75.1754	27.3616	47.9	2.19456	110.	-.74891	2.06282
2J15	75.1754	27.3616	47.9	2.19456	110.	-.74891	2.06282
END	75.1754	27.3616	57.48	1.8367	109.5	-.61406	1.73101
2J16	75.1754	27.3616	57.48	1.8367	109.5	-.61406	1.73101
END	75.1754	27.3616	67.06	1.43657	109.1	-.470668	1.35728
2J17	75.1754	27.3616	67.06	1.43657	109.1	-.470668	1.35728
END	75.1754	27.3616	76.64	1.0004	108.7	-.321211	.94743
2J18	75.1754	27.3616	76.64	1.0004	108.7	-.321211	.94743
END	75.1754	27.3616	86.22	.534635	108.3	-.168212	.507484
2J19	75.1754	27.3616	86.22	.534635	108.3	-.168212	.507484
END	75.1754	27.3616	95.8	0	0	0	0

WEXY
WCAP Calculation Details
for Night Directional Antenna

WEXY Tower 1 Night

```
WESTBERG CIRCUIT ANALYSIS PROGRAM


 FILE NAME = WEXY1NIT.txt

 I     3.7100    0    1   12.5980     .0000     .0000
 R     1.0000    1    2     .0000     .0000     .0000
 L     3.0050    2    3     .0000     .0000     .0000
 C      .0001    3    0     .0000     .0000     .0000
 R    45.6390    3    0    9.4754     .0000     .0000
 EX     .0000    0    0     .0000     .0000     .0000


 FREQ = 1.520

   NODE      VOLT MAG     VOLT PHASE
    1       220.9974        49.7802
    2       218.0531        50.3694
    3       174.4778        21.5289
                          BRANCH VOLTAGE       BRANCH CURRENT FROM NODE IMPEDANCE  TO NODE IMPEDANCE
                          MAG      PHASE       MAG      PHASE RESISTANCE REACTANCE RESISTANCE REACTANCE
 VSWR
R    1-  2     1.000      3.71    12.598      3.71    12.598     47.46     36.00     46.46     36.00
L    2-  3     3.005    106.47   102.598      3.71    12.598     46.46     36.00     46.46      7.30
C    3-  0      .000    174.48    21.529       .18   111.529       .00   -943.31       .00       .00
R    3-  0    45.639    174.48    21.529      3.74     9.800     45.64      9.48       .00       .00
```

WEXY Tower 2 Night

```
WESTBERG CIRCUIT ANALYSIS PROGRAM


 FILE NAME = WEXY2NIT.txt

 I     3.6600    0    1  115.1520     .0000     .0000
 R     1.0000    1    2     .0000     .0000     .0000
 L     1.7170    2    3     .0000     .0000     .0000
 C      .0001    3    0     .0000     .0000     .0000
 R    12.6770    3    0  -22.7610     .0000     .0000
 EX     .0000    0    0     .0000     .0000     .0000


 FREQ = 1.520

   NODE      VOLT MAG     VOLT PHASE
    1        52.6620        90.5715
    2        49.3572        88.8039
    3        93.1001        53.5163
                          BRANCH VOLTAGE       BRANCH CURRENT FROM NODE IMPEDANCE  TO NODE IMPEDANCE
                          MAG      PHASE       MAG      PHASE RESISTANCE REACTANCE RESISTANCE REACTANCE
 VSWR
R    1-  2     1.000      3.66   115.152      3.66   115.152     13.08     -5.99     12.08     -5.99
L    2-  3     1.717     60.02  -154.848      3.66   115.152     12.08     -5.99     12.08    -22.38
C    3-  0      .000     93.10    53.516       .10   143.516       .00   -943.31       .00       .00
R    3-  0    12.677     93.10    53.516      3.57   114.400     12.68    -22.76       .00       .00
```

Section 6 - WEXY
Sampling System Information and Measurements

The antenna sampling system uses a Potomac Instruments AM-19D monitor connected to Delta TCT-3 toroidal transformers located in the ATU enclosure at the base of each tower. The antenna sampling coaxial lines are Cablewave FCC4-50A. These lines are equal length copper clad 1/2 inch foam dielectric coaxial cable. Connectors for these cables are those recommended by the manufacturer.

Sampling system impedance measurements were made with a HP model 8751A network analyzer system using an external directional coupler and power amplifier. The network analyzer system was calibrated with known standards prior to measurements. Measurements were made from the antenna monitor end of the sampling lines with the lines open circuited and with the toroid sampling transformers connected.

The table immediately below gives detail on the frequencies above and below the carrier frequency where resonance (low resistance and zero reactance) was indicated. These occur at odd multiples of 90 degrees, and the table gives data on the 90 degree and 270 degree resonant frequencies of the lines. The 270 degree frequency is closest to 1520 kHz in terms of ratio. The electrical line lengths at 1520 kHz in the table were calculated by multiplying the ratio of the two frequencies times 270.

TOWER	Sampling Line Open-Circuited 90 Degrees Resonant Freq (kHz)	Sampling Line Open-Circuited 270 Degrees Resonant Freq (kHz)	Sampling Line Calculated Electrical Length 1520 kHz (Degrees)	1520 kHz Measured Impedance with TCT-3 Connected (Ohms)
1	723.948	2186.500	187.7	50.6 –j0.1
2	725.500	2187.740	187.6	50.3 –j0.1

The WEXY sampling lines meet the FCC Rule requirement that the measured lines be equal in length within one electrical degree.

The characteristic impedance of the WEXY sampling lines was calculated by using the formula:

$$\mathbf{Zo = \sqrt{(\sqrt{(R1^2 + X1^2)} \bullet \sqrt{(R2^2 + X2^2)}}}$$

With R1 + X1 equal to the measured impedance at the +45 degree offset frequency and R2 + X2 equal to the measured impedance at the -45 degree offset frequency.

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	1822.076	2.9 –j48.1	2550.924	4.5 +j50.1	49.2
2	1823.109	2.9 –j48.1	2552.371	4.6 +j50.0	49.2

The WEXY sampling lines meet the FCC Rule requirement that the measured characteristic impedances of the lines be equal within two ohms.

The Delta TCT-3 toroidal sampling transformers were tested for phase and current response with a Hewlitt-Packard 8751A network analyzer in a calibrated measurement system. This was done by passing a common reference signal at 1520 kHz generated by the analyzer through the units placed side by side and feeding the output of each unit into the A and B receivers of the analyzer set up to the measure relative ratio and phase of their output voltages.

TOWER	Delta TCT-3 Ratio	Delta TCT-3 Phase
1	1.000	0.0
2	0.996	+0.100

The WEXY Delta TCT-3 toroidal sampling transformers are within the Delta specified ratings of +/- 2 percent magnitude and +/- 3 degrees.

The WEXY antenna sampling system uses a Potomac Instruments AM-19D monitor serial number 2086. The operation and calibration of the monitor was verified as correct by the procedure in the manufacturer's manual.

Additionally, the operating parameters were measured with the Hewlitt-Packard 8751A network analyzer in a calibrated measurement system. The tables below show the results of those measurements compared to the antenna monitor observed indications.

WEXY OBSERVED PARAMETERS NIGHT

TOWER	HP 8751A Analyzer Ratio (Night)	HP 8751A Analyzer Phase (Night)	Potomac 1901 Ratio (Night)	Potomac 1901 Phase (Night)
1	1.000	0.0	100.0	0.0
2	0.987	+106.6	98.7	+106.6

Section 7 - WEXY
Reference Field Intensity Measurements

Reference field intensity measurements were made on radials at the azimuth bearings with specified radiation limits and on the center azimuth bearing of major lobe radial. Measurements were made at three locations on each radial with a Potomac Instruments Field Intensity Meter of known calibration. The measured field intensity, distance from the antenna, GPS coordinates, and descriptions are included in the table below.

Radial	Point	Distance (km)	Field (mv/m)	Coordinates (NAD 27)		Description
10.5°	1	2.74	20	26-11-21.9	80-09-50.8	On storm drain, south side NW 57 Place in front of # 774
	2	3.79	14.7	26-12-08.9	80-10-10.1	On storm drain at east entrance to 505 NW 65 Ct
	3	4.48	8.9	26-12-31.2	80-10-19.0	Sewer cover in st. near entrance to 2204 Cypress Bend Drive
160°	1	2.86	69	26-08-58.2	80-08-52.6	SW corner NW 3 Ave - 12 Ct at Dead End Sign.
	2	3.85	30.5	26-08-28.0	80-08-40.2	E. side Andrews on sidewalk at storm drain behind church.
	3	4.74	36.8	26-08-01.2	80-08-29.5	Progresso Dr. at edge RR Right of way. Just S. of SW 3 Ave.
309.5°	1	2.52	36	26-11-17.2	80-10-30.1	At Mailbox. 5005 NW 26 Ave.
	2	3.02	19	26-11-27.5	80-10-52.1	At Mailbox 5219 NW 28 Ave
	3	3.59	18.5	26-11-39.2	80-11-07.9	At Mailbox 3000 Prospect Rd.
340°	1	1.86	26	26-11-21.9	80-09-50.8	N edge Perimeter Rd. # 1535 opposite gated garage door.
	2	3.41	5.4	26-12-08.9	80-10-10.1	North side of Cypress Creek Rd at 2001 sign
	3	4.14	3.9	26-12-31.2	80-10-19.0	W side NW 21 Ave between McNab and 68 ST opp. Bus stop

Measurements were made October 29, 2010 by George D Butch using
Potomac Instruments FIM-41, SN 2113 calibrated March 8, 2007.

Section 8 - WEXY
Direct Measurement of Operating Power

All antenna resistance and reactance measurements, and sampling line electrical length measurements were made with a HP model 8751A network analyzer system using an external directional coupler and power amplifier. The network analyzer system was calibrated with known standards prior to measurements.

The non-directional and directional antenna resistance measurements were made at the phasor cabinet common point J-plug located near the common point current meter for operating power determination. The reactance was adjusted to provide a non-reactive load at the transmitter output connection at 1520 kHz.

Section 9 - WEXY
RFR Protection Information

The operation of WEXY at 5 kW will not result in exposure of workers or the general public to radio frequency radiation in excess of the levels specified in 47 CFR 1.1310.

Fences were installed around all tower bases to comply with the minimum distance of 2 meters as specified in OET bulletin 65 for this frequency, power level, and tower height to prevent electric and magnetic exposure greater than the permissible levels.

These fences limit access by the general public to areas with fields that exceed the requirements of the FCC rules for both directional and non-directional operation. If it becomes necessary for workers to enter the tower base areas for maintenance, the station will either switch to non-directional operation on one of the towers or cease operation to provide RFR safety for the workers.

Section 10 - WEXY
Exemption from Post Construction Survey Certification Requirement

The WEXY antenna site is an existing FCC licensed facility. No changes were made to the towers or ground system as described in the station license. This application for license is for a change of operating power only on both the non-directional day and directional night operation.

WEXY is therefore exempt from the Post Construction Survey Certification Requirement of the FCC rules.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
Multicultural Radio Broadcast Licensee, LLC

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
WEXY	BP-20040109ABM	1520	Unlimited	0.8	5.0

2. Station location

State	City or Town
Florida	Wilton Manors

3. Transmitter location

State	County	City or Town	Street address (or other identification)
Florida	Broward	Oakland Park	945 NW 38th Street

4. Main studio location

State	County	City or Town	Street address (or other identification)
Florida	Broward	Wilton Manors	412 W Oakland Park Blvd

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

State	County	City or Town	Street address (or other identification)
Florida	Broward	Wilton Manors	412 W Oakland Park Blvd

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. Section 6

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
4.16	10.0

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50	50	-j3.0	-j3.0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	0		100.0			
2	+102.6		98.7			

Manufacturer and type of antenna monitor: Potomac Instruments AM-19D

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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.
Self supporting tower	47.55	48.16	48.16	Exhibit No.

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	26	o	10	'	26.0	"	West Longitude	80	o	09	'	27.0	"

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

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

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

none

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

Non-directional power determination at phasor common point meter

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)
M Donald Crain	
Address (include ZIP Code) 5 Green Acres Drive Boiling Springs, SC 29316	Date November 1, 2010
	Telephone No. (Include Area Code) (864) 599 1819

☐ Technical Director ☐ Registered Professional Engineer

☐ Chief Operator ☑ Technical Consultant

☐ Other (specify)

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