



ENGINEERING STATEMENT
OF
BENJAMIN L. PIDEK, P.E.
IN SUPPORT OF
REQUEST FOR PROGRAM TEST AUTHORITY AND
APPLICATION FOR LICENSE
FM STATION WRUR
ROCHESTER, NY
UNIVERSITY OF ROCHESTER BROADCAST CORPORATION

Background

The University of Rochester Broadcast Corporation (URBC) is the licensee of Non-Commercial (NCE) station WRUR-FM operating on Ch. 203 (88.5 MHz) at Rochester, NY. URBC filed for a Construction Permit to change the height, ERP, antenna and location of WRUR to provide better service to the Rochester area. URBC was granted that Construction Permit (BPED-20100722BMK) and is now filing for a license to cover completion of construction and requesting Program Test Authority as all permit conditions have been satisfied.

Station Parameters

The station's authorized parameters are listed below:

Coordinates:	43° 08' 07" N. Latitude (NAD27) 77° 35' 03" W. Longitude
Frequency:	88.5 MHz (CH203)
Polarization:	Circular
ERP:	15.1 kW
HAAT:	115.3m
RC AMSL:	262.9m
RC AGL:	57.9m



The ERI “proof-of-performance” for the antenna is attached hereto which contains the measured azimuth patterns and manufacturer’s installation instructions for the ERI 1097-1CP-DA. A statement from the WXXI Vice President of Technology & Operations, Kent Hatfield, that certifies the antenna was installed pursuant to the manufacturer’s instructions attached hereto. A certification from a licensed surveyor that the antenna is oriented correctly is also included.

Community Coverage

The predicted 60 dBu contour of WRUR (generated by using the measured composite azimuth pattern provided by the antenna manufacturer), completely encompasses the Community of License, Rochester, NY. Figure 1, attached hereto, is a map depicting the predicted 60 dBu and 70 dBu contours of WRUR along with the area defined as the City of Rochester by the city’s Bureau of Planning and Zoning. As can be seen on the map, both contours completely encompass the city which satisfies the provisions of Section 73.515 of the Commission’s rules.

Environmental/RFR

This report addresses only the conditions specified in 47CFR1.1307 that deal with Radio Frequency Radiation (RFR). Any other non-RFR conditions that might require the preparation of an EA are beyond the scope of this report; however, since the structure is existing and registered, such conditions should not be an issue requiring further consideration as there will be no increase in height or change in width of the tower structure.

The WRUR transmitter is located at a multi-user site known locally as Pinnacle Hill. The site is the transmitting location of numerous television and FM transmitters; therefore, the Commission placed a condition on the WRUR construction permit requiring that WRUR make radio frequency power density measurements to ensure that the addition of the WRUR transmitter (at the site) would not create areas that exceed the Commission’s guidelines for



human exposure to radio frequency radiation. Per the Commission's condition, URBC hired the firm Smith and Fisher to perform the required radiofrequency power density measurements throughout the transmitter site area while WRUR was conducting equipment tests. Attached hereto, is a copy of the Smith and Fisher report on the results of the measurements which indicates that, even with the addition of WRUR transmitter at the multi-user site, the Pinnacle Hill site will remain in compliance with the Commission's maximum permissible exposure guidelines for the public; workers in controlled areas will be trained on RFR issues and encouraged to wear personal RFR monitors when on the structure. The tower base is enclosed by a locked security fence and appropriate signage warning of potential RFR hazards is posted.

URBC agrees to comply with the Commission's requirements regarding power adjustments or cessation of operation in coordination with other users of the site as may be necessary to ensure a compliant environment for worker access.

W221CL Antenna

FM translator station W221CL is co-located on the tower with the WRUR-FM antenna and, prior to the installation of the WRUR antenna, it was determined that the W221CL antenna would be too close to the WRUR antenna after installation; therefore, when installation of the WRUR antenna began, Radio Livingston, Limited, licensee of W221CL agreed to allow its antenna to be relocated more than 10 ft. below the new WRUR antenna^{1/}. Considering that both antenna are now more than 10 ft. apart from each other (vertically) on the tower, both the manufacturer of the WRUR antenna and the manufacturer of the W221CL antenna agree that neither will impact the other. Attached, hereto, is a document from the W221CL antenna manufacturer, PSI, which indicates that the WRUR ERI antenna will not impact the W221CL as the WRUR antenna is more than 10 ft. away.

^{1/} W221CL is in the process of notifying the Commission of its decrease in antenna height.

**Certification**

I hereby certify that the foregoing report or statement was prepared by me but may include work performed by others under my supervision or direction. The statements of fact contained therein are believed to be true and correct based on personal knowledge, information and belief unless otherwise stated; with respect to facts not known of my own personal knowledge, I believe them to be true and correct based on their origin from sources known to me to be generally reliable and accurate. I have prepared this document with due care and in accordance with applicable standards of professional practice.

Benjamin L. Pidek, P.E.

John F. X. Browne, P.E.
August 04, 2011

Directional Antenna System for WRUR, Rochester, New York

July 28, 2010

Electronics Research Inc. is providing a custom fabricated antenna system that is specially designed to meet the FCC requirements and the general needs of radio station WRUR.

The antenna is the ERI model 1097-1CP-DA configuration. The circular polarized system consists of one bay using one driven circular polarized radiating element. The antenna was mounted on the tapered tower with bracketry to provide an antenna orientation of North 96.5 degrees East. The antenna was tested on a tapered tower, which is the structure the station plans to use to support the array. All tests were performed on a frequency of 88.5 megahertz, which is the center of the FM broadcast channel assigned to WRUR.

Pattern measurements were made on a sixty-acre antenna pattern range that is owned and operated by Electronics Research, Inc. The tests were performed under the direction of Thomas B. Silliman, president of Electronics Research, Inc. Mr. Silliman has the Bachelor of Electrical Engineering and the Master of Electrical Engineering degrees from Cornell University and is a registered professional engineer in the states of Indiana, Maryland and Minnesota.



Directional Antenna System Proposed For WRUR, Rochester, New York

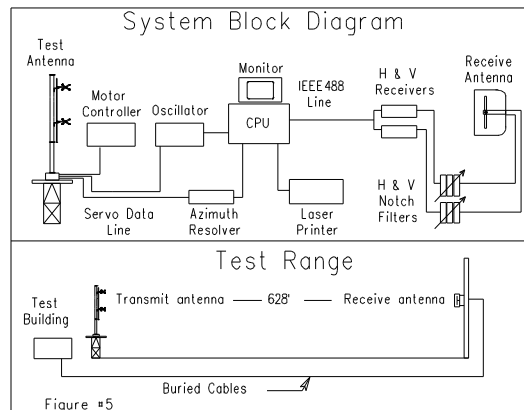
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DESCRIPTION OF THE TEST PROCEDURE

The test antenna consisted of a full-scale model of the complete circular polarized system. The elements and brackets that were used in this test are electrically equivalent to those that will be supplied with the antenna.

The power distribution and phase relationship to the antenna elements was adjusted in order to achieve the directional radiation patterns for both horizontal and vertical polarization components.

The proof-of-performance was accomplished using a tapered tower with identical dimension and configuration including all braces, ladders, conduits, coaxial lines and other appurtenances that are included in the actual aperture at which the antenna will be installed. The structure was erected vertically on a turntable mounted on a non-metallic building with the antenna centered vertically on the structure, making the center of radiation of the test approximately 30 feet above ground. The turntable is equipped with a motor drive and a US Digital angle position indicator. The resolution of this angle position indicator is one-hundredth of a degree.



The antenna under test was operated in the transmitting mode and fed from a HP8657D signal generator. The frequency of the signal source was set at 88.5 MHz and was constantly monitored by a Rohde & Schwarz ESVD measuring receiver.

A broadband horizontal and vertical dipole system, located approximately 628 feet from the test antenna, was used to receive the emitted test signals. The dipole system was mounted at the same height above terrain as the center of the antenna under test. The signals received by the dipole system were fed to the test building by way of two buried Heliax cables to a Rohde & Schwarz measuring receiver. This data was interfaced to a laser jet printer by means of a computer system. Relative field strength was plotted as a function of azimuth.

Directional Antenna System Proposed For WRUR, Rochester, New York

(Continued)

The measurements were performed by rotating the test antenna in a counter-clockwise direction and plotting the received signal on polar coordinated graph paper in a clockwise direction. Both horizontal and vertical components were recorded separately.

CONCLUSIONS

The circular polarized system consists of one bay using one driven circular polarized radiating element. The power distribution and phase relationship will be fixed when antenna is manufactured. Proper maintenance of the elements should be all that is required to maintain the pattern in adjustment.

The 1097-1CP-DA array is to be mounted on the tapered tower at a bearing of North 96.5 degrees East. Blue prints provided with the antenna will show the proper antenna orientation alignment. The antenna alignment procedure should be directed by a licensed surveyor as prescribed by the FCC.

Figure #1 represents the maximum value of either the horizontal or vertical component at any azimuth. The measured horizontal plane relative field pattern, for both the horizontal and vertical polarization components, is shown on Figure #2 attached. The actual measured pattern does not exceed the authorized FCC composite pattern at any azimuth. A calculated vertical plane relative field pattern is shown on Figure #3 attached. The power in the maximum will reach 15.100 kilowatts (11.790 dBk).

The RMS of the vertically polarized horizontal plane component does not exceed the RMS of the horizontally polarized horizontal plane component.

The composite horizontal and vertical maximum relative field pattern obtained from the measured data as shown on Figure #1 has an RMS that is greater than 85% of the filed composite pattern.

The clear vertical length of the structure required to support the antenna is 20 feet.

Directional Antenna System
Proposed For
WRUR, Rochester, New York

(Continued)

The directional antenna should not be mounted on the top of an antenna tower that includes a top-mounted platform larger than the cross-sectional area of the tower in the horizontal plane. No obstructions other than those that are specified by the blue prints supplied with the antenna are to be mounted within 60 ft. horizontally of the system. The vertical distance to the nearest obstruction should be a minimum of 10 ft. from the directional antenna. Metallic guy wires should be a minimum distance of forty feet horizontally from the antenna.

ELECTRONICS RESEARCH, INC.

A handwritten signature in black ink, reading "Tom Schaefer". The signature is written in a cursive, flowing style with a large initial "T" and "S".

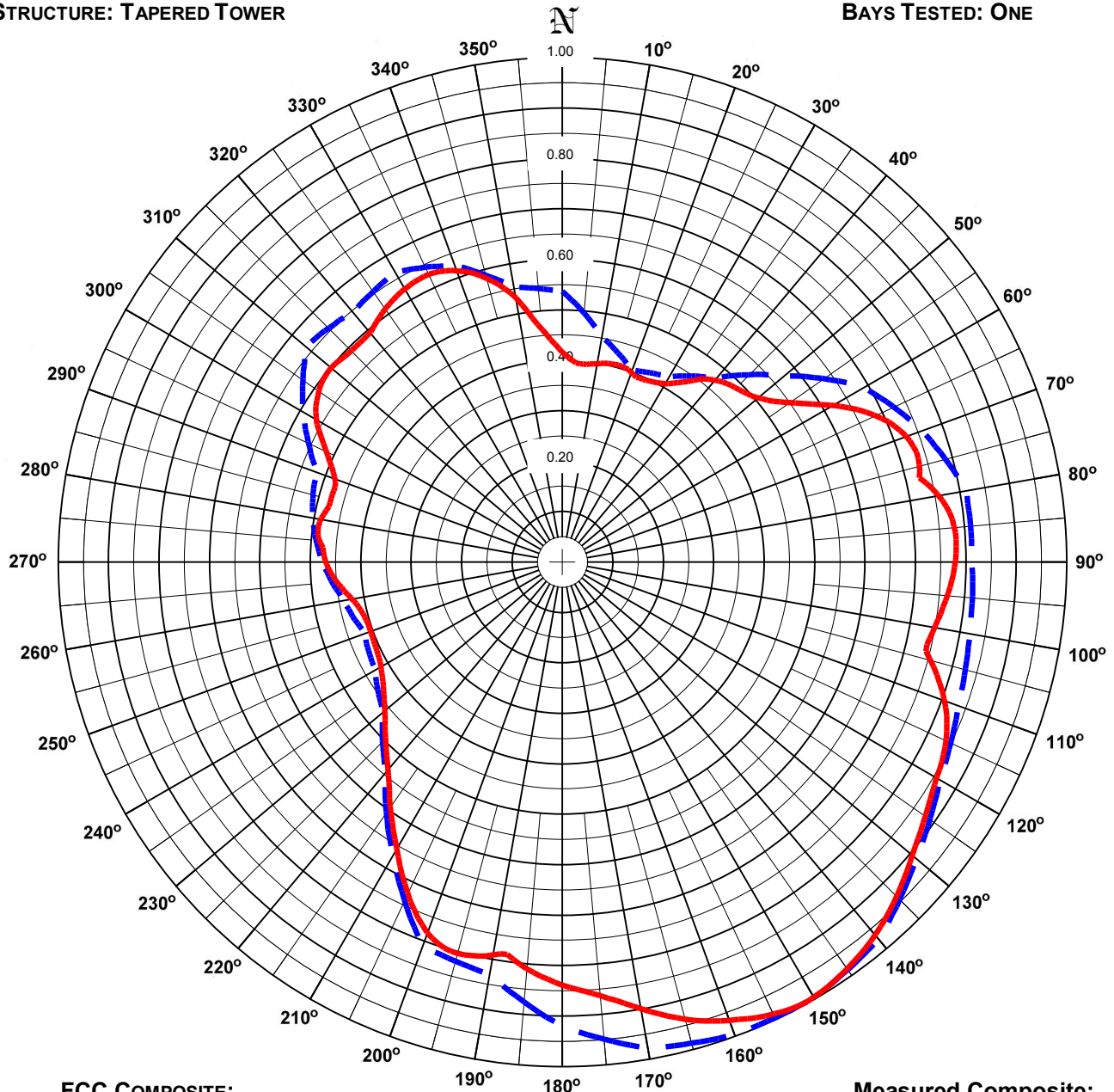
The Microsoft Word document on file electronically at Electronic Research, Inc. governs the specifications, scope, and configuration of the product described. All other representations whether verbal, printed, or electronic are subordinate to the master copy of this document on file at ERI.

ERI® *Horizontal Plane Relative Field Pattern*

Electronics Research, Inc. 7777 Gardner Rd. Chandler, In 47610 Phone (812) 925-6000 Fax (812) 925-4030 <http://www.eriinc.com/>

FIGURE NO: 1
STATION: WRUR
LOCATION: ROCHESTER, NY
ANTENNA: 1097-1CP-DA
STRUCTURE: TAPERED TOWER

DATE: 7/7/2010
FREQUENCY: 88.5 MHz
ORIENTATION: 96.5° TRUE
MOUNTING: CUSTOM
BAYS TESTED: ONE



FCC COMPOSITE:

RMS: 0.695
MAXIMUM: 1.000 @ 150° TRUE
MINIMUM: 0.401 @ 20° TRUE

Measured Composite:

RMS: 0.663
MAXIMUM: 1.000 @ 151° True
MINIMUM: 0.391 @ 5° True

COMMENTS: COMPOSITE PATTERN: THIS PATTERN SHOWS THE MAXIMUM OF EITHER THE H OR V AZIMUTH VALUES. THIS PATTERN IS GREATER THAN 85% OF THE FCC FILED COMPOSITE PATTERN BMPED-20070907AAV.

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Electronics Research, Inc. 7777 Gardner Rd. Chandler, In 47610 Phone (812) 925-6000 Fax (812) 925-4030 <http://www.eriinc.com/>

Station: WRUR
Location: Rochester, NY
Frequency: 88.5 MHz

Antenna: 1097-1CP-DA
Orientation: 96.5° True
Tower: Tapered Tower

Figure: 1
Date: 7/7/2010
Reference: wrur1m.fig

Angle	Envelope			Polarization	Angle	Envelope			Polarization
	Field	kW	dBk			Field	kW	dBk	
0°	0.413	2.57	4.10	Horizontal	180°	0.842	10.70	10.29	Horizontal
5°	0.391	2.31	3.63	Vertical	185°	0.813	9.97	9.99	Horizontal
10°	0.396	2.37	3.74	Vertical	190°	0.795	9.53	9.79	Vertical
15°	0.402	2.44	3.88	Vertical	195°	0.806	9.82	9.92	Vertical
20°	0.397	2.38	3.77	Vertical	200°	0.785	9.30	9.68	Vertical
25°	0.394	2.34	3.70	Horizontal	205°	0.727	7.98	9.02	Vertical
30°	0.404	2.47	3.92	Horizontal	210°	0.658	6.55	8.16	Vertical
35°	0.433	2.83	4.51	Horizontal	215°	0.595	5.35	7.28	Vertical
40°	0.467	3.29	5.17	Vertical	220°	0.539	4.38	6.42	Horizontal
45°	0.485	3.55	5.50	Horizontal	225°	0.496	3.72	5.70	Horizontal
50°	0.503	3.81	5.81	Horizontal	230°	0.460	3.20	5.04	Horizontal
55°	0.545	4.48	6.52	Horizontal	235°	0.434	2.84	4.53	Horizontal
60°	0.614	5.70	7.56	Horizontal	240°	0.416	2.61	4.17	Horizontal
65°	0.682	7.02	8.47	Horizontal	245°	0.408	2.52	4.01	Horizontal
70°	0.724	7.91	8.98	Horizontal	250°	0.406	2.49	3.95	Horizontal
75°	0.733	8.11	9.09	Horizontal	255°	0.409	2.53	4.03	Horizontal
80°	0.755	8.61	9.35	Vertical	260°	0.426	2.74	4.38	Horizontal
85°	0.780	9.18	9.63	Vertical	265°	0.452	3.08	4.89	Horizontal
90°	0.779	9.17	9.62	Vertical	270°	0.470	3.34	5.24	Horizontal
95°	0.768	8.90	9.49	Vertical	275°	0.485	3.55	5.50	Vertical
100°	0.750	8.50	9.30	Vertical	280°	0.485	3.55	5.51	Vertical
105°	0.754	8.60	9.34	Horizontal	285°	0.475	3.40	5.32	Horizontal
110°	0.806	9.80	9.91	Horizontal	290°	0.480	3.49	5.42	Vertical
115°	0.840	10.66	10.28	Horizontal	295°	0.518	4.05	6.07	Vertical
120°	0.858	11.11	10.46	Horizontal	300°	0.564	4.80	6.82	Vertical
125°	0.880	11.68	10.68	Horizontal	305°	0.589	5.24	7.19	Vertical
130°	0.906	12.41	10.94	Horizontal	310°	0.596	5.37	7.30	Vertical
135°	0.939	13.31	11.24	Horizontal	315°	0.590	5.25	7.20	Vertical
140°	0.967	14.12	11.50	Horizontal	320°	0.591	5.28	7.22	Vertical
145°	0.987	14.71	11.68	Horizontal	325°	0.610	5.62	7.50	Horizontal
150°	0.999	15.08	11.78	Vertical	330°	0.622	5.85	7.67	Horizontal
155°	0.993	14.88	11.73	Horizontal	335°	0.625	5.91	7.71	Horizontal
160°	0.970	14.22	11.53	Horizontal	340°	0.611	5.64	7.51	Horizontal
165°	0.942	13.39	11.27	Horizontal	345°	0.579	5.05	7.04	Horizontal
170°	0.903	12.31	10.90	Horizontal	350°	0.528	4.21	6.24	Horizontal
175°	0.867	11.34	10.55	Horizontal	355°	0.459	3.18	5.02	Horizontal

Polarization:
Maximum Field: 1.000 @ 151° True
Minimum Field: 0.391 @ 5° True
RMS: 0.663
Maximum ERP: 15.100 kW
Maximum Power Gain: 1.067 (0.282 dB)

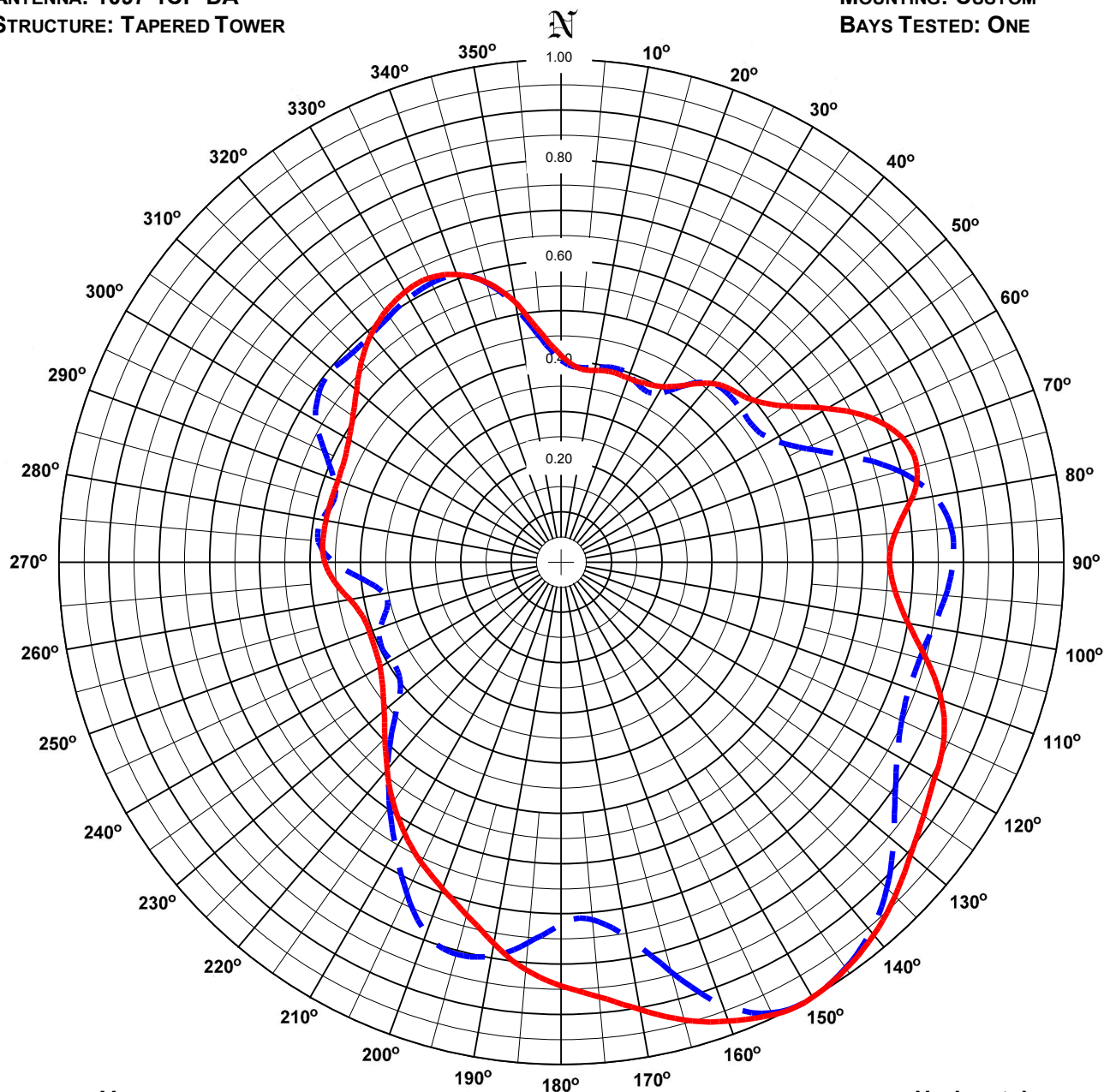
Total Input Power: 14.152 kW

ERI® *Horizontal Plane Relative Field Pattern*

Electronics Research, Inc. 7777 Gardner Rd. Chandler, In 47610 Phone (812) 925-6000 Fax (812) 925-4030 <http://www.eriinc.com/>

FIGURE NO: 2
STATION: WRUR
LOCATION: ROCHESTER, NY
ANTENNA: 1097-1CP-DA
STRUCTURE: TAPERED TOWER

DATE: 7/7/2010
FREQUENCY: 88.5 MHz
ORIENTATION: 96.5° TRUE
MOUNTING: CUSTOM
BAYS TESTED: ONE



VERTICAL

RMS: 0.634
MAXIMUM: 1.000 @ 151° TRUE
MINIMUM: 0.354 @ 258° TRUE

Horizontal

RMS: 0.647
Maximum: 1.000 @ 151° True
Minimum: 0.387 @ 7° True

COMMENTS: MEASURED PATTERNS OF THE HORIZONTAL AND VERTICAL COMPONENTS.

ERI® *Horizontal Plane Relative Field List*

Electronics Research, Inc. 7777 Gardner Rd. Chandler, In 47610 Phone (812) 925-6000 Fax (812) 925-4030 <http://www.eriinc.com/>

Station: WRUR
Location: Rochester, NY
Frequency: 88.5 MHz

Antenna: 1097-1CP-DA
Orientation: 96.5° True
Tower: Tapered Tower

Figure: 1
Date: 7/7/2010
Reference: wrur1m.fig

Angle	Horizontal			Vertical			Angle	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.413	2.57	4.10	0.403	2.45	3.90	180°	0.842	10.70	10.29	0.719	7.81	8.92
5°	0.390	2.29	3.61	0.391	2.31	3.63	185°	0.813	9.97	9.99	0.759	8.69	9.39
10°	0.389	2.28	3.58	0.396	2.37	3.74	190°	0.770	8.94	9.51	0.795	9.53	9.79
15°	0.393	2.33	3.68	0.402	2.44	3.88	195°	0.726	7.95	9.00	0.806	9.82	9.92
20°	0.391	2.31	3.64	0.397	2.38	3.77	200°	0.690	7.19	8.57	0.785	9.30	9.68
25°	0.394	2.34	3.70	0.383	2.21	3.44	205°	0.658	6.54	8.16	0.727	7.98	9.02
30°	0.404	2.47	3.92	0.391	2.31	3.63	210°	0.623	5.85	7.67	0.658	6.55	8.16
35°	0.433	2.83	4.51	0.432	2.82	4.51	215°	0.583	5.13	7.10	0.595	5.35	7.28
40°	0.466	3.28	5.16	0.467	3.29	5.17	220°	0.539	4.38	6.42	0.536	4.34	6.38
45°	0.485	3.55	5.50	0.473	3.37	5.28	225°	0.496	3.72	5.70	0.477	3.43	5.35
50°	0.503	3.81	5.81	0.470	3.33	5.23	230°	0.460	3.20	5.04	0.422	2.69	4.29
55°	0.545	4.48	6.52	0.469	3.33	5.22	235°	0.434	2.84	4.53	0.393	2.33	3.68
60°	0.614	5.70	7.56	0.489	3.61	5.57	240°	0.416	2.61	4.17	0.390	2.30	3.62
65°	0.682	7.02	8.47	0.538	4.38	6.41	245°	0.408	2.52	4.01	0.395	2.35	3.72
70°	0.724	7.91	8.98	0.618	5.76	7.61	250°	0.406	2.49	3.95	0.384	2.22	3.47
75°	0.733	8.11	9.09	0.700	7.40	8.69	255°	0.409	2.53	4.03	0.360	1.95	2.91
80°	0.706	7.52	8.76	0.755	8.61	9.35	260°	0.426	2.74	4.38	0.358	1.93	2.86
85°	0.666	6.71	8.26	0.780	9.18	9.63	265°	0.452	3.08	4.89	0.393	2.33	3.68
90°	0.653	6.45	8.09	0.779	9.17	9.62	270°	0.470	3.34	5.24	0.450	3.06	4.86
95°	0.668	6.73	8.28	0.768	8.90	9.49	275°	0.476	3.43	5.35	0.485	3.55	5.50
100°	0.702	7.44	8.72	0.750	8.50	9.30	280°	0.476	3.42	5.35	0.485	3.55	5.51
105°	0.754	8.60	9.34	0.739	8.24	9.16	285°	0.475	3.40	5.32	0.471	3.35	5.24
110°	0.806	9.80	9.91	0.736	8.18	9.13	290°	0.474	3.39	5.30	0.480	3.49	5.42
115°	0.840	10.66	10.28	0.747	8.43	9.26	295°	0.477	3.44	5.37	0.518	4.05	6.07
120°	0.858	11.11	10.46	0.772	9.00	9.54	300°	0.488	3.60	5.56	0.564	4.80	6.82
125°	0.880	11.68	10.68	0.811	9.93	9.97	305°	0.506	3.87	5.88	0.589	5.24	7.19
130°	0.906	12.41	10.94	0.863	11.25	10.51	310°	0.532	4.28	6.31	0.596	5.37	7.30
135°	0.939	13.31	11.24	0.916	12.68	11.03	315°	0.563	4.79	6.80	0.590	5.25	7.20
140°	0.967	14.12	11.50	0.958	13.85	11.42	320°	0.590	5.26	7.21	0.591	5.28	7.22
145°	0.987	14.71	11.68	0.986	14.67	11.66	325°	0.610	5.62	7.50	0.599	5.41	7.33
150°	0.999	15.06	11.78	0.999	15.08	11.78	330°	0.622	5.85	7.67	0.608	5.58	7.47
155°	0.993	14.88	11.73	0.988	14.74	11.69	335°	0.625	5.91	7.71	0.614	5.69	7.55
160°	0.970	14.22	11.53	0.935	13.20	11.21	340°	0.611	5.64	7.51	0.609	5.61	7.49
165°	0.942	13.39	11.27	0.842	10.69	10.29	345°	0.579	5.05	7.04	0.578	5.04	7.03
170°	0.903	12.31	10.90	0.757	8.64	9.37	350°	0.528	4.21	6.24	0.516	4.02	6.04
175°	0.867	11.34	10.55	0.713	7.67	8.85	355°	0.459	3.18	5.02	0.447	3.02	4.80

Polarization:	Horizontal	Vertical
Maximum Field:	1.000 @ 151° True	1.000 @ 151° True
Minimum Field:	0.387 @ 7° True	0.354 @ 258° True
RMS:	0.647	0.634
Maximum ERP:	15.100 kW	15.100 kW
Maximum Power Gain:	1.067 (0.282 dB)	1.067 (0.282 dB)

Total Input Power: 14.152 kW

Directional Antenna System for WRUR, Rochester, New York

(Continued)

ANTENNA SPECIFICATIONS

Antenna Type:	1097-1CP-DA
Frequency:	88.5 MHz
Number of Bays:	One

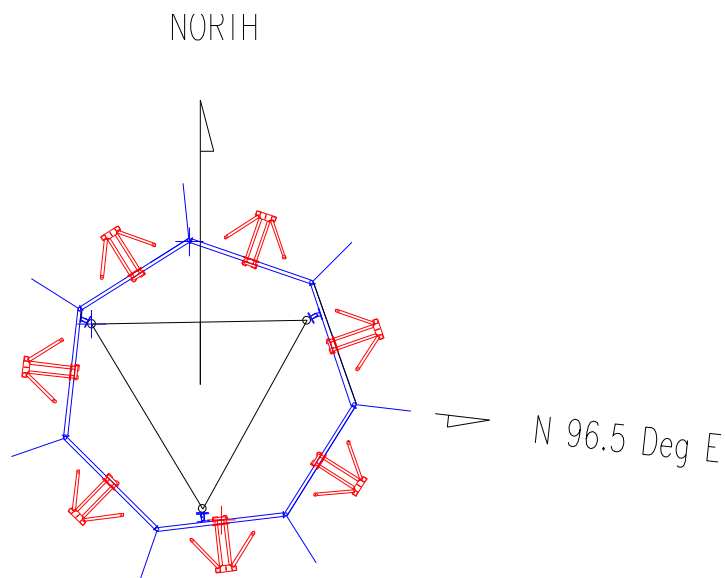
MECHANICAL SPECIFICATIONS

Mounting:	Custom
System length:	10 ft
Aperture length required:	20 ft
The approximate weight:	3,900 lbs
The approximate weight w/ 1/2" ice:	6,750 lbs
The approximate windload:	135 ft ² CaAa
The approximate windload w/ 1/2" ice:	286 ft ² CaAa
Orientation:	96.5° true

Input flange to the antenna 3 1/8" female.

ELECTRICAL SPECIFICATIONS (For directional use)

Maximum horizontal ERP:	15.100 kW (11.790 dBk)
Horizontal maximum power gain:	1.067 (0.282 dB)
Maximum vertical ERP:	15.100 kW (11.790 dBk)
Vertical maximum power gain:	1.067 (0.282 dB)
Total input power:	14.152 kW (11.508 dBk)





Kent Hatfield
Vice President, Technology & Operations
WXXI Public Broadcasting Council
280 State Street
Rochester New York 14614

John FX Browne & Associates, P.C.
P.O. BOX 1090
Bloomfield Hills, MI 48303

August 4, 2011

Re: WRUR Directional FM Antenna

John:

The new ERI model 1097-1CP-DA antenna for the University of Rochester Broadcast Corporation's licensed broadcast facility WRUR was fully completed in February of this year.

I personally oversaw the fabrication of the antenna system on the ground and verified the assembly of the system on the tower. This supervision included the panel antennae, the power divider as well as the individual feed lines to the seven panels. All portions of the system installation matched the assembly drawings as provided by Electronics Research Inc.

James C. Colton has provided a survey showing that the antenna orientation of the reference panels on the antenna is correct referencing the ERI installation document. (Attached)

My credentials are as follows: BSBA from Henderson State College; Studio Supervisor for KTHV, Little Rock; Director of Engineering for Louisiana Public Broadcasting Network; served as a technical advisor to PBS corporate technical leadership; member of the National Academy of Television Arts and Sciences; nominated for a Technical Emmy; actively employed in broadcast engineering for more than 43 years.

Please feel free to contact me should you require additional information regarding this project.

Sincerely,

A handwritten signature in blue ink that reads "Kent Hatfield".

Kent S. Hatfield

COLTON LAND SURVEYING

James C. Colton, P.L.S.
108 Nunda Blvd.
Rochester, NY 14610

Fax: (585)442-6754 Phone: (585) 244-2395

jcolton@rochester.rr.com


February 15, 2011

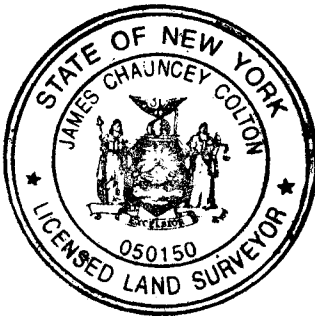
Kent Hatfield
Vice President, Technology & Operations
WXXI, PBC
280 State Street
Rochester, NY 14614

Dear Mr. Hatfield:

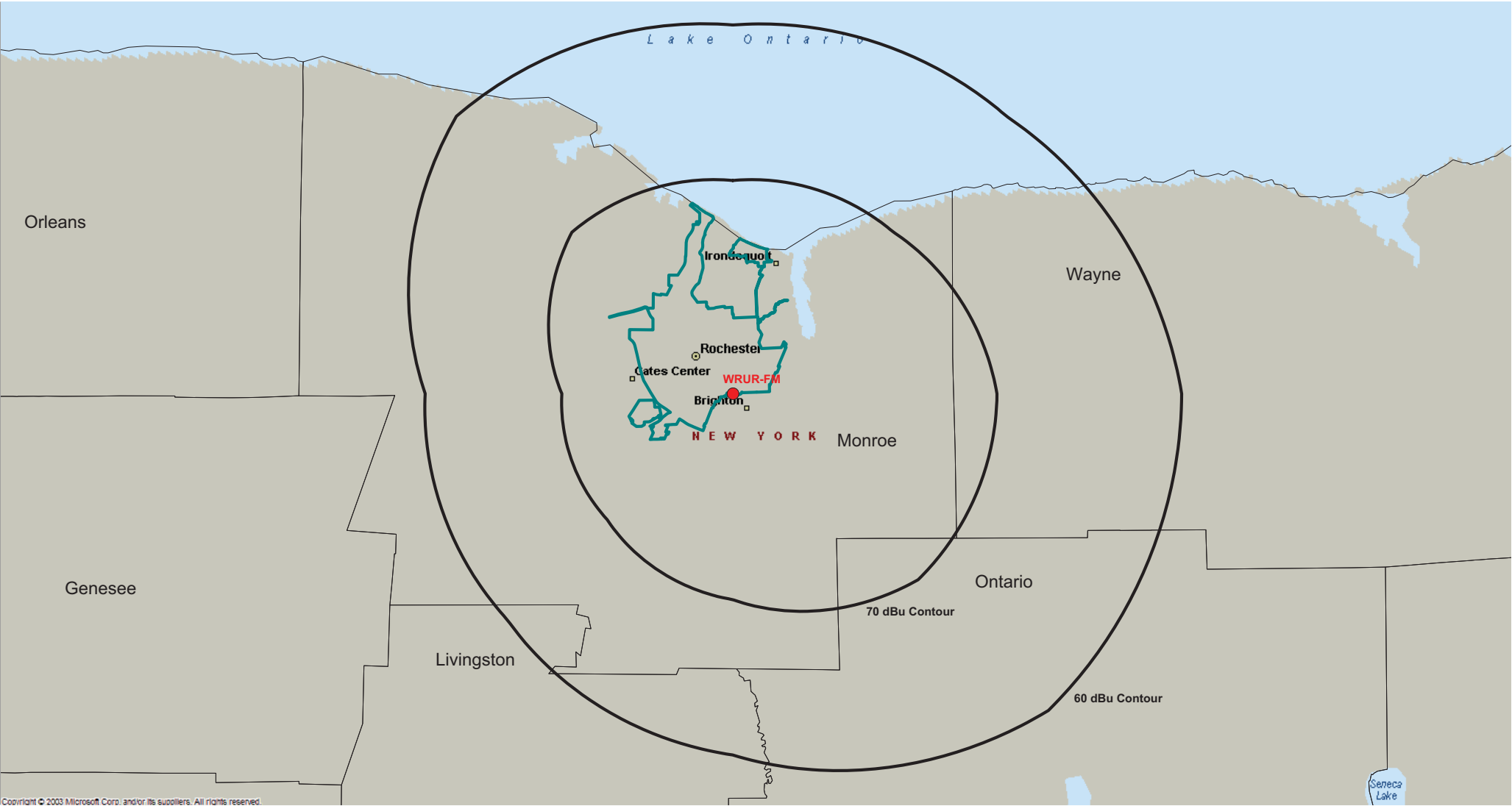
According to field measurements performed by me on February 1, 2011, the wing element between panels B & C of the WRUR Antenna # 1097-1CP-DA has been properly oriented on the WXXI Pinnacle Tower, Rochester, NY to an azimuth of 96.5 degrees measured clockwise from true north.

Sincerely,


James C. Colton, P.L.S.
Colton Land Surveying



Predicted 60 dBu and 70dBu Contour of WRUR-FM Based on Measured Composite Azimuth Pattern



Green Outline - City Boundary for Rochester, NY

Figure 1

Note: predicted contours are generated based on a HAAT value that was calculated using only 8 radials.

MEMORANDUM

To: Kent Hatfield, VP of Technology & Operations

From: Kevin Fisher, President
Smith and Fisher, LLC

Re: Power Density Survey of WRUR-FM

On behalf of University of Rochester Broadcast Corporation, licensee of non-commercial FM radio station WRUR-FM, Channel 203 in Rochester, New York, I performed a detailed power density survey of the area surrounding its new transmitting site, atop Pinnacle Hill in Rochester, on July 26, 2011. I was assisted by Kyle Fisher of Smith and Fisher, LLC. Under Construction Permit BPED-20100722BMK, the station is authorized to operate as a Class B1 facility, with an effective radiated power of 15.1 kW and an antenna radiation center 57.9 meters above ground on the WXXI-DT tower on Pinnacle Hill. The antenna is directional, with the main lobe of radiation oriented south-southeast of the tower site. As a condition of the construction of the station, the Federal Communications Commission has required that an RF measurement study be conducted at the Pinnacle Hill site once the station is operational, and prior to the licensing of the facility.

Based upon the results of these measurements, I have determined that the Pinnacle Hill antenna farm is compliant with the Federal Communications Commission's human exposure guidelines for non-ionizing electromagnetic radiation.

Pinnacle Hill is home to many of the Rochester area radio and television stations. Attached to this report as Figure 1 is a tabulation of the digital full-power television and analog LPTV facilities that are authorized to utilize this site. A tabulation of licensed FM stations and translators operating from the same site is provided as Figure 2. The antenna farm generally

runs northeast to southwest along a ridge near the top of Pinnacle Hill. While there is a gate and fence on the northeast side of the property (where Pinnacle Hill Road ends), a series of trails surrounding the site open onto the property. Graffiti on the side of one of the transmitter buildings indicates public access to the site. Therefore, the antenna farm generally must be considered as uncontrolled from an RF exposure standpoint, and the more stringent standards apply. However, there are certain portions of the site that are enclosed with a fence and locked gate (including the WRUR-FM transmitter building and the WRUR-FM tower itself). As long as all of station personnel and contractors who must access these areas are trained in RF safety practices, these specific locations within the antenna farm can be considered controlled from the Commission's RF exposure standpoint. It is also important to note that there are a number of yellow RF warning signs posted throughout this site.

In conducting this study, we utilized a Narda 8715 power density meter with a shaped response probe. At any given location, this meter samples the RF energy from each source and applies the FCC exposure guideline for that station's frequency. It then sums the contributions for all sources and displays the result as a total percentage of the allowable limit for controlled environments. If the area is considered to be an uncontrolled environment, the value on the meter is simply multiplied by a factor of five (the difference between the controlled and uncontrolled maximum permissible exposure guidelines, or MPE).

We begin each survey with a sweep of the entire measurement area, breaking the site into defined sections, and recording the maximum RF value in each section. In places where we find maximum RF values that approach or exceed the MPE for that type of area (controlled or uncontrolled), we take a more defined approach.

The FCC's exposure guidelines are based on whole-body absorption of RF, as opposed to exposure to "hot spots", which do not have a significant effect on overall temperature increase

in the human body, the chief biological effect of RF on humans. Therefore, the use of a technique called “spatial averaging” is not only appropriate, but considered to be more applicable to actual human exposure to such signals. In employing this technique, the probe is moved vertically from ankle-level to a point approximately six feet above ground and incorporates the point where the maximum RF value was previously found to exist. During this event, the meter averages the RF values measured throughout the vertical space, which represents total body absorption of RF at that location. In some cases, multiple spatial averages are taken in the same location, but with the probe head oriented at different azimuths to account for signal reflections from nearby structures and the meter user. As long as the spatial average (or the average of multiple spatial averages) is below the applicable MPE for that area, the measurement location is considered to be compliant with the Commission’s exposure guidelines.

We also used a Narda SRM-3000 selective power density meter at various times throughout the study. This meter samples the RF energy at a given location and determines the relative contribution of each of the stations of interest. Prior to the study, we programmed the meter to include all of the broadcast stations operating from the Pinnacle Hill site. Typically, we take a measurement with this meter at the same location where we had previously taken a spatial average with the other power density meter (where the maximum RF level at a given point approached or exceeded the MPE).

We began by determining that WRUR-FM was operating at its authorized effective radiated power (15.1 kW) and measured the RF levels within the WRUR-FM transmitter room. A maximum value of 4.8% of the MPE for controlled areas was recorded. Therefore, the power density within this building is well within the allowable guidelines for occupational areas and even meets the guideline value for public areas. There were workers on the roof of the WRUR-FM transmitter building, replacing the roof shingles. I climbed onto the roof and found that the

maximum power density value there was only 4.4 percent of the MPE for controlled areas, or only 22 percent of the uncontrolled standard.

RF measurements were taken along the upper portion of the trail system that runs along Pinnacle Hill and into the antenna farm. A maximum value of 26.5 percent of the Commission's allowable guideline value for public areas was observed. Therefore, there is no concern regarding RF exposure from Pinnacle Hill broadcasters to users of this trail system.

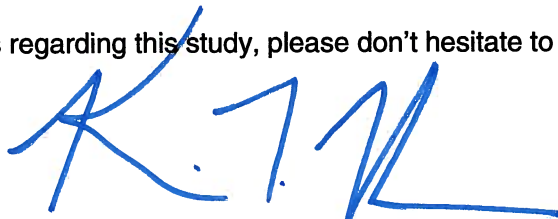
Attached as Figure 3a and Figure 3b are drawings of the exterior area measured during this study and the results of the survey. In Figure 4, we have tabulated some of the results from this measurement survey. In most areas, the total RF from all sources, including WRUR-FM operating at 15.1 kW, was significantly less than the FCC's maximum permissible exposure guideline for uncontrolled areas such as this one atop Pinnacle Hill. As shown in Figures 3 and 4, there are a couple of areas where localized hot spots were discovered. In each of these cases, the point was concentrated in a small and specific area. As the probe was moved inches away from the high points, the RF readings decreased significantly. Spatial averages of these areas revealed RF values below the Commission's guideline exposure limits. Therefore, these points can be considered "hot spots" and are of no significant biological concern.

I then went back to these points where the RF values approached or exceeded the Commission's MPE values and took measurements with the Narda SRM-3000 selective power density meter. The small RF hotspot occurring near the transformer in front of the WHEC-DT transmitter building is a result of the operation of WZNE(FM), not WRUR-FM. However, as expected, along the safety cable running along the ladder going up the WRUR-FM tower, the contribution of WRUR-FM to the total RF environment was significant. While the RF level near this cable at the base of the tower was below the Commission's MPE for controlled areas, the value would be expected to rise quickly as a worker began to climb the tower. Accordingly, I

suggest that WRUR-FM be taken off the air while work is being performed on this particular tower. Alternatively, a worker wearing an RF suit (with the appropriate footwear, gloves and hood) could climb the tower while WRUR-FM remains on the air. I also suggest that the station participate in a coordination effort with the other users of the site when workers must access any of the towers in this antenna farm.

In conclusion, based on the measurement survey of the area surrounding the WRUR-FM transmitter site, operation of WRUR-FM with its authorized facility does not exceed the ground-level maximum permissible exposure guidelines for workers and the public at the Pinnacle Hill antenna farm. Further, the station can take appropriate measures to protect workers that must access roof and tower areas in close proximity to the WRUR-FM antenna.

If anyone has any questions regarding this study, please don't hesitate to contact me.



KEVIN T. FISHER

August 2, 2011

Figure 1

LICENSED TELEVISION STATIONS ON PINNACLE HILL

<u>Call Sign</u>	<u>Ch.</u>	<u>City</u>	<u>St.</u>	<u>DA</u>	<u>Power (kW)</u>	<u>Dist. (km) *</u>
WHEC-DT	10	Rochester	NY	No	18.1	0.0
WHAM-DT	13	Rochester	NY	No	18.0	0.0
WXXI-DT	16	Rochester	NY	Yes	180.0	0.0
WUHF-DT	28	Rochester	NY	Yes	320.0	0.1
WHSB-LP	36	Rochester	NY	Yes	16.0	0.1
WAWW-LP	38	Rochester	NY	Yes	27.2	0.1
W42CO	42	Rochester	NY	No	8.0	0.1
WROC-DT	45	Rochester	NY	Yes	1000.0	0.0

*From WRUR-FM site

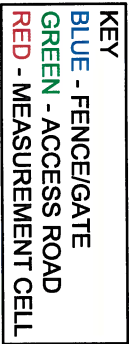
Figure 2

LICENSED FM STATIONS ON PINNACLE HILL

<u>Call</u>	<u>Ch.</u>	<u>City</u>	<u>St.</u>	<u>DA</u>	<u>Power (kW)</u>	<u>Dist. (km) *</u>
WRUR-FM	203	Rochester	NY	Yes	15.1	0.0
WXXI-FM	218	Rochester	NY	No	45.0	0.0
W221CL	221	Rochester	NY	Yes	0.1	0.0
WZNE	231	Brighton	NY	No	1.8	0.1
W234AZ	234	Brighton	NY	No	0.01	0.0
WCMF-FM	243	Rochester	NY	No	48.0	0.1
WPXY-FM	250	Rochester	NY	No	50.0	0.1

*From WRUR-FM site

41.0



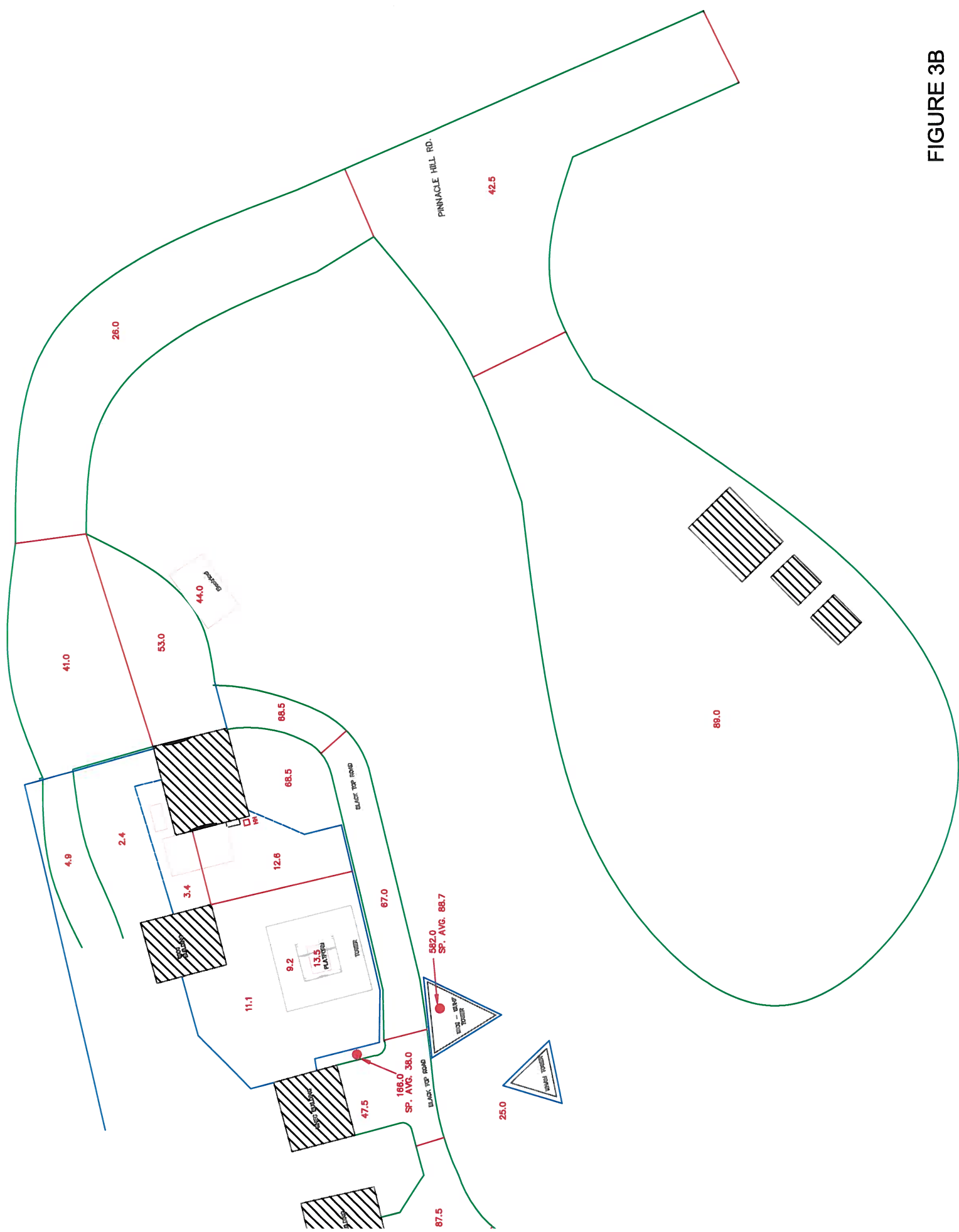


FIGURE 3B

Figure 4

RF READINGS IN SELECTED AREA AT PINNACLE HILL ANTENNA FARM

<u>Description</u>	<u>RF Max</u> <u>(% MPE)</u>	<u>Spatial Avg.</u> <u>(% MPE)</u>	<u>Cont./</u> <u>Uncont.</u>	<u>Major Contributors (% of Total)</u>
Pinnacle Hill Rd.	42.5		Uncont.	
Parking Lot	53		Uncont.	
Trail	26.5		Uncont.	
WRUR Xmitter Bldg.	4.8		Cont.	
WRUR Xmitter Roof	4.4		Cont.	
WRUR Xmitter Cmpnd.	12.6		Cont.	
Tower Platform	13.5		Cont.	
Road Inside Gate	68.5		Uncont.	
WHEC-DT Xmitter Parking	47.5		Uncont.	
WHAM-DT Xmitter Parking	87.5		Uncont.	WRUR(23%) / WROC (57%)
Transformer	166	38	Uncont.	WRUR(34%) / WZNE (47%)
WRUR Tower Base	7.4		Cont.	
Safety Wire	582	88.7	Cont.	WRUR(98%)



Propagation Systems, Inc.

Quality Broadcast Antenna Systems

March 31, 2011

Kent Hatfield
Vice President, Technology & Operations
WXXI
Rochester, NY

Ref: FM station WRUR co-locating with the existing W221CL FM Translator

Dear Mr. Hatfield,

I am writing in response to your inquiring regarding the co-location of the new WRUR main antenna in relation to the existing W221CL translator antenna which is a PSI model PSIFML-1B-DA.

Based on the information you provided in our conversation, it is my conclusion that if a minimum 10 ft. vertical separation between the antennas is maintained, there will be no impact on radiation characteristics of the W221CL antenna.

If you have any additional questions please don't hesitate to call.

Sincerely,

Douglas A. Ross
President