

Engineering Exhibit

**APPLICATION FOR
STATION LICENSE**

prepared for

Board of Trustees, University of Kentucky

WUKY(FM) Lexington, Kentucky

Facility ID 4303

Ch. 217C1 100 kW (DA-MAX) 237 m

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FCC Form 302-FM, Section III

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This material supplies a “hard copy” of the engineering portions of this application as entered November 10, 2006 for filing electronically. Since the FCC’s electronic filing system may be accessed by anyone with the applicant’s name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name RICHARD H. MERTZ	Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature	Date 11/10/2006	
Mailing Address CAVELL, MERTZ & DAVIS, INC. 7839 ASHTON AVENUE		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 -
Telephone Number (include area code) 7033929090	E-Mail Address (if available) RMERTZ@CMDCONSULTING.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

Section III - Engineering			
TECHNICAL SPECIFICATIONS			
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.			
TECH BOX			
1.	Channel: 217		
2.	a. Effective Radiated Power: 100 kW(H) 100 kW(V) b. Maximum Effective Radiated Power: kW(H) kW(V) (Beam-Tilt Antenna ONLY) <input checked="" type="checkbox"/> Not Applicable		
3.	Transmitter Power Output: 19.63 kW		
4.	Antenna Data		
	Manufacturer ERI	Model MP-8AC-DA-HW	Number of Sections 8
			Spacing Between Sections (wavelength) 0.5
NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.			
CERTIFICATION			
All applicants must complete this section.			
5.	Main Studio Location. The main studio location complies with 47 C.F.R. Section 73.1125.		<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 6]
6.	Transmitter Power Output. The operating transmitter power output produces the authorized effective radiated power.		<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 7]
APPLICATIONS FILED TO COVER A CONSTRUCTION PERMIT.			
Only applicants filing this application to cover a construction permit must complete the following section.			
NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.			
7.	Constructed Facility . The facility was constructed as authorized in the underlying construction permit or complies with 47 C.F.R. Section 73.1690.		<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 8]
8.	Special Operating Conditions. The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit.		<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 9]
	An exhibit may be required. Review the underlying construction permit.		[Exhibit 10]
APPLICATIONS FILED PURSUANT TO 47 C.F.R. SECTIONS 73.1675(c) or 73.1690(c).			
Only applicants filing this application pursuant to 47 C.F.R. Sections 73.1675(c) or 73.1690(c) must complete the following section.			
9.	Changing transmitter power output. Is this application being filed to authorize a change in transmitter power output caused by the replacement of omnidirectional antenna with another omnidirectional antenna or an alteration of the transmission line system? See 47 C.F.R. Sections 73.1690(c)(1) and (c)(10).		<input type="radio"/> Yes <input type="radio"/> No

<p>10. Increasing effective radiated power. Is this application being filed to authorize an increase in ERP for a station operating in the nonreserved band (Channels 221-300)? See 47 C.F.R. Sections 73.1690(c)(4), (c)(5) and (c)(7).</p> <p>If "Yes" to the above, the applicant certifies the following:</p> <p>a. Spacing Requirements. The increase in ERP was authorized pursuant to MM Docket 88-375 (Class A stations) OR the facility complies with the spacing requirements of 47 C.F.R. Section 73.207.</p> <p>b. International Coordination. The transmitter site is greater than 320 km from the Canadian or Mexican borders OR coordination for the station's international class is complete.</p> <p>c. Interference. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied OR are not applicable.</p> <p>Exhibit required. If the proposed facility must be notified to the entities set forth in 47 C.F.R. Section 73.1030, the applicant must provide a copy of the written approval for the ERP increase from the affected entity.</p> <p>d. Multiple Ownership Showing. The increase in ERP will not require the consideration of a multiple ownership showing pursuant to 47 C.F.R. Section 73.3555.</p> <p>e. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.</p> <p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	<input type="radio"/> Yes <input type="radio"/> No
<p>a. Spacing Requirements. The increase in ERP was authorized pursuant to MM Docket 88-375 (Class A stations) OR the facility complies with the spacing requirements of 47 C.F.R. Section 73.207.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 11]
<p>b. International Coordination. The transmitter site is greater than 320 km from the Canadian or Mexican borders OR coordination for the station's international class is complete.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 12]
<p>c. Interference. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied OR are not applicable.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 13]
<p>Exhibit required. If the proposed facility must be notified to the entities set forth in 47 C.F.R. Section 73.1030, the applicant must provide a copy of the written approval for the ERP increase from the affected entity.</p>	[Exhibit 14]
<p>d. Multiple Ownership Showing. The increase in ERP will not require the consideration of a multiple ownership showing pursuant to 47 C.F.R. Section 73.3555.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 15]
<p>e. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 16]
<p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	
<p>11. Increasing vertically polarized effective radiated power. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(4) to authorize an increase in the vertically polarized ERP for a station operating in the reserved band (Channels 200-220)?</p> <p>If "Yes" to the above, the applicant certifies the following:</p>	<input type="radio"/> Yes <input type="radio"/> No
<p>a. TV Channel 6 Protection Requirements. The facility complies with the spacing requirements of 47 C.F.R. Section 73.525(a)(1).</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 17]
<p>b. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1 306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 18]
<p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	
<p>12. Decreasing effective radiated power (non-reserved channel). Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(8) to authorize a decrease in the ERP for a station operating in the nonreserved band (Channels 221-300)?</p> <p>If "Yes" to the above, the applicant certifies the following:</p>	<input type="radio"/> Yes <input type="radio"/> No
<p>a. Community Coverage . The proposed facility complies with the community coverage requirements of 47 C.F.R. Section 73.315 where the distance to the 3.16 mV/m contour is predicted using the standard prediction method in 47 C.F.R. Section 73.313.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 19]
<p>b. Auxiliary Facilities. The authorized or pending auxiliary facilities for this station comply with 47 C.F.R. Section 73.1675(a).</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 20]
<p>c. Multiple Ownership Showing. The decrease in ERP is not requested or required to establish compliance with 47 C.F.R. Section 73.3555.</p>	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 21]
<p>13. Decreasing effective radiated power (reserved channel). Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(8) to authorize a decrease in the ERP for a station operating in the reserved band (Channels 200-220)?</p> <p>If "Yes" to the above, the applicant certifies the following:</p>	<input type="radio"/> Yes <input type="radio"/> No
<p>a. Community Coverage . The proposed facility complies with the community coverage requirements of 47 C.F.R. Section 73.1690(c)(8)(i) where the distance to the 1 mV/m contour is predicted using the standard prediction method in 47 C.F.R. Section</p>	<input type="radio"/> Yes <input type="radio"/> No

73.313.	See Explanation in [Exhibit 22]
b. Auxiliary Facilities. The authorized or pending auxiliary facilities for this station comply with 47 C.F.R. Section 73.1675(a).	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 23]
14. Replacing a directional antenna. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(2) to replace a directional antenna with another directional antenna? If "Yes" to the above, the applicant certifies the following:	<input type="radio"/> Yes <input type="radio"/> No
a. Measurement of Directional Antenna. The composite measured pattern and measurement procedures comply with 47 C.F.R. Section 73.1690(c)(2). Exhibit required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 24] [Exhibit 25]
b. Installation of Directional Antenna. The installation of the directional antenna complies with 47 C.F.R. Section 73.1690(c)(2). Exhibit required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 26] [Exhibit 27]
15. Deleting contour protection status. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(6) to delete contour protection status (47 C.F.R. Section 73.215) for a station operating in the nonreserved band (Channels 221-300)? If "Yes" to the above, the applicant certifies that the facility complies with the spacing requirements of 47 C.F.R. Section 73.207.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 28]
16. Use a formerly licensed main facility as an auxiliary facility. Is this application being filed pursuant to 47 C.F.R. Section 73.1675(c)(1) to request authorization to use a formerly licensed main facility as an auxiliary facility and/or change the ERP of the proposed auxiliary facility? If "Yes" to the above, the applicant certifies the following:	<input type="radio"/> Yes <input type="radio"/> No
a. Auxiliary antenna service area. The proposed auxiliary facility complies with 47 C.F.R. Section 73.1675(a).	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 29]
b. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1 306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 30]
By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	
17. Change the license status. Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(9) to change the license status from commercial to noncommercial or from noncommercial to commercial?	<input type="radio"/> Yes <input type="radio"/> No
If "Yes" to the above, submit an exhibit providing full particulars. For applications changing license status from commercial to noncommercial, include Section II of FCC Form 340 as an exhibit to this application.	[Exhibit 31]
PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.	

Exhibits

Exhibit 9

Description: WUKY(FM) APPLICATION FOR STATION LICENSE - EXHIBIT 9

EXHIBIT 9 WITH ATTACHMENTS PROVIDED AS A PDF FILE.

Attachment 9

Description
WUKY(FM) Application for Station License - Exhibit 9

Exhibit 9 - Statement A
SPECIAL OPERATING CONDITIONS
prepared for
Board of Trustees, University of Kentucky
WUKY (FM) Lexington, Kentucky
Facility ID 4303
Ch. 217C1 100 kW (DA-MAX) 237 m

Board of Trustees, University of Kentucky ("BOTUK") is licensee of WUKY(FM), Ch. 217C1, Lexington, Kentucky (BLED-19891211KA). *BOTDUK* has completed construction related to modification of the WUKY facility, as authorized in its construction permit ("CP," file number BPED-20050922AFT). The CP authorizes a facility increase to 100 kW effective radiated power ("ERP") and an antenna height above average terrain ("HAAT") of 237 meters at different transmitter site.

A directional antenna is specified in the CP. Upon review of the instant application by Commission staff, *BOTUK* requests full program test authority and subsequent issuance of a license to cover the construction. Until full program test authority is granted, *BOTUK* will operate the WUKY facility at 50 percent of the authorized ERP, under the automatic program test authority provisions of §73.1620(a)(2). This statement and associated exhibits are provided to comply with the various conditions on the CP and with §73.316(c)(2) of the Commission's Rules.

The directional antenna is manufactured by ERI, model number MP-8AC-DA-HW. It consists of eight circularly polarized sections, spaced at one-half wavelength intervals. ERI performed range testing of a full scale model of the antenna for pattern measurement.

The manufacturer's proof-of-performance data and related exhibits as specified in **Condition 1** of the CP are supplied as **Attachment 1** to this statement. The measured data demonstrates compliance with **Condition 4**, which specify the maximum and principal minimum ERP limits. Based on the method specified in §73.316(c)(2)(ix)(A) and azimuths spaced every ten degrees (see **Exhibit 9 – Table 1**) the calculated RMS of the measured composite pattern is 0.646, which is 90.1 percent of the RMS of the authorized pattern. Thus, the Commission's minimum 85 percent RMS requirement is met. Additionally, the RMS of the vertically polarized component does not exceed that of horizontal polarization.

Exhibit 9 - Statement A
SPECIAL OPERATING CONDITIONS
(page 2 of 3)

Pursuant to §73.316(c)(2)(ix)(B), a map is supplied as **Exhibit 9 - Figure 1**, which depicts the WUKY 60 dBμ (principal community) contour resulting from the measured composite pattern and the boundaries of Lexington, the station's principal community. As demonstrated thereon, the facility as constructed complies with §73.316(c)(2)(ix)(B), as the entire principal community is encompassed by the principal community contour.

The surveyor's and installation engineer's statements are supplied as **Attachments 2 and 3**, respectively. These items will satisfy **Conditions 2 and 3**, respectively. With respect to **Condition 5**, *BOTUK* will reduce power or cease operation as necessary to protect personnel from excessive levels of radiofrequency electromagnetic field.

Regarding the requirements of §73.316(c)(2)(iv) - (vi) of the Commission's Rules, a representative of the applicant advised the undersigned that:

1. The antenna is side-mounted on a particular type of antenna tower in accordance with specific instructions provided by the antenna manufacturer;
2. The directional antenna is not mounted on the top of an antenna tower which includes a top-mounted platform larger than the nominal cross-sectional area of the tower in the horizontal plane; and
3. No other antenna of any type is mounted on the same tower level as the directional antenna, and no antenna of any type is mounted within the horizontal or vertical distance specified by the antenna manufacturer as being necessary for proper directional operation.

Exhibit 9 – Table 2 supplies a summary of the antenna gain and transmission line loss figures, and shows that the required transmitter power output is 19.63 kW to achieve 100 kW ERP.

Exhibit 9 - Statement A
SPECIAL OPERATING CONDITIONS
(page 3 of 3)

Certification

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief.

A handwritten signature in black ink, appearing to read "Richard H. Mertz". The signature is fluid and cursive, with the first name "Richard" being the most prominent part.

Richard H. Mertz.
November 10, 2006

Cavell, Mertz & Davis, Inc.
7839 Ashton Avenue
Manassas, VA 20109
(703) 392-9090

EXHIBIT 9 - FIGURE 1
PRINCIPAL COMMUNITY COVERAGE
MEASURED COMPOSITE ANTENNA PATTERN

prepared November 2006 for
Board of Trustees,
University of Kentucky
WUKY (FM) Lexington, Kentucky
Facility ID 4303
Ch. 217C1 100 kW 237 m

Cavell, Mertz & Davis, Inc.
Manassas, Virginia

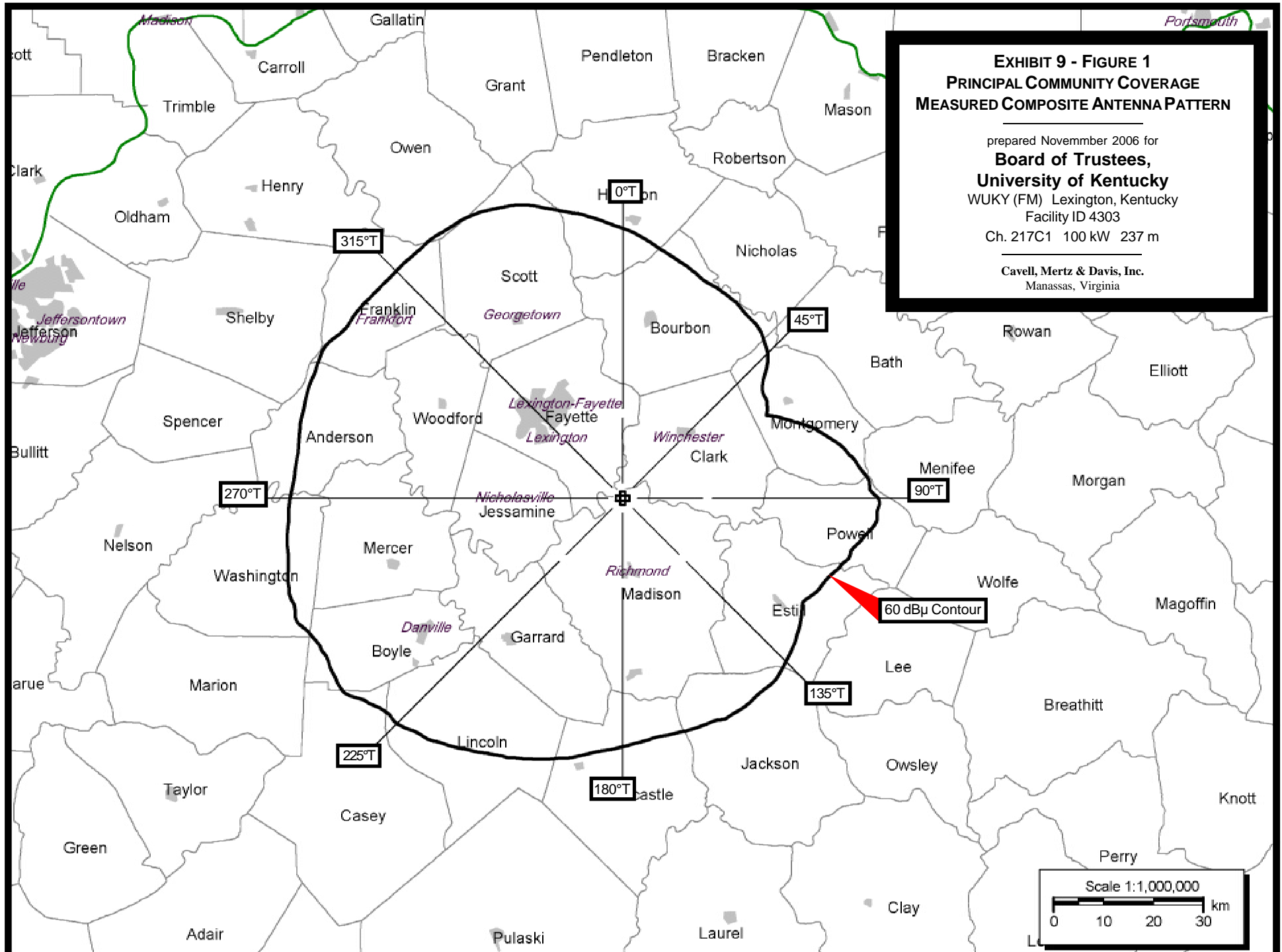


Exhibit 9 – Table 1
SPECIAL OPERATING CONDITIONS
 prepared for
Board of Trustees, University of Kentucky
 WUKY (FM) Lexington, Kentucky
 Facility ID 4303
 Ch. 217C1 100 kW (DA-MAX) 237 m

Construction Permit File Number: BPED-20050922AFT

Construction		----- Measured Pattern -----		
Azimuth (°T)	Permit	Horizontal	Vertical	H & V
	Envelope <u>Rel Field</u>	Polarization <u>Rel Field</u>	Polarization <u>Rel Field</u>	Composite <u>Rel Field</u>
0	0.549	0.501	0.530	0.530
10	0.436	0.386	0.433	0.433
20	0.436	0.301	0.369	0.369
30	0.436	0.213	0.320	0.320
40	0.436	0.132	0.263	0.263
50	0.436	0.111	0.185	0.185
60	0.436	0.149	0.091	0.149
70	0.436	0.228	0.069	0.228
80	0.436	0.310	0.061	0.310
90	0.436	0.353	0.071	0.353
100	0.436	0.348	0.104	0.348
110	0.436	0.271	0.159	0.271
120	0.436	0.215	0.235	0.235
130	0.436	0.224	0.300	0.300
140	0.436	0.250	0.341	0.341
150	0.436	0.259	0.361	0.361
160	0.436	0.291	0.367	0.367
170	0.436	0.352	0.387	0.387
180	0.436	0.413	0.425	0.425
190	0.549	0.444	0.489	0.489
200	0.691	0.463	0.565	0.565
210	0.870	0.566	0.657	0.657
220	1.000	0.709	0.756	0.756
230	1.000	0.849	0.829	0.849
240	1.000	0.904	0.890	0.904
250	1.000	0.946	0.938	0.946
260	1.000	0.976	0.972	0.976
270	1.000	0.994	0.993	0.994
280	1.000	1.000	1.000	1.000
290	1.000	0.993	1.000	1.000
300	1.000	0.975	0.976	0.976
310	1.000	0.967	0.885	0.967
320	1.000	0.986	0.709	0.986
330	1.000	0.966	0.623	0.966
340	0.870	0.832	0.651	0.832
350	0.691	0.652	0.633	0.652
RMS:	0.717	0.627	0.602	0.646

90.1%
of envelope

Exhibit 9 - Table 2
ANTENNA / LINE SYSTEM GAINS AND LOSSES
prepared November, 2006 for
Board of Trustees, University of Kentucky
WUKY(FM) Lexington, Kentucky
Facility ID 4303
Ch. 217C1 100 kW (DA-MAX) 237 m

Constuction Permit File Number BPED-20050922AFT

Authorized Effective Radiated Power:	100 kW	20.00 dBk
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Antenna System

ERI MP-8AC-DA-HW	Max Power Gain:	6.342	8.022 dB
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Antenna Input Power:	15.8 kW
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Line and Other Losses

Transmission Line

Andrew HJ11-50	Efficiency:	0.832	
Length 734 ft.	Loss:		0.799 dB

3 1/8" Rigid Line	Efficiency:	0.993	
Length 34 ft.	Loss:		0.033 dB

Notch Filters

ERI Model 945-3	Efficiency:	0.973	
	Loss:		0.120 dB

Total Losses:	0.952 dB
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<u>Transmitter Power Output:</u>	19.63 kW	12.93 dBk
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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/>

*Directional Antenna System
for
WUKY, Lexington, Kentucky*

June 28, 2006

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 WUKY.

The antenna is the ERI model MP-8AC-DA-HW configuration. The circular polarized system consists of 8 half-wavelength spaced bays using one driven circular polarized radiating element per bay, two horizontal parasitic elements per bay and three vertical parasitic elements interleaved between alternate bay pairs. The antenna was mounted on a pole off the North 237 degrees East tower leg with bracketry to provide an antenna orientation of North 285 degrees East. The antenna was tested on a 7' face tower, which is the structure the station plans to use to support the array. All tests were performed on a frequency of 91.3 megahertz, which is the center of the FM broadcast channel assigned to WUKY.

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 For WUKY, Lexington, Kentucky

(Continued)

DESCRIPTION OF THE TEST PROCEDURE

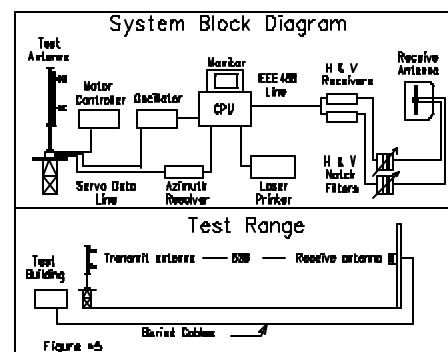
The test antenna consisted of two bay levels of the circular polarized system with the associated horizontal and vertical parasitic elements. The elements and brackets that were used in this test are electrically equivalent to those that will be supplied with the antenna. A section of 3 1/8 inch o.d. rigid coaxial line was used to feed the test antenna, and a section of 3 1/8 inch o.d. rigid outer conductor only was attached above the test antenna. The lines were properly grounded during all tests.

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 7' face 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 North Atlantic Model 8500 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 calibrated 1-05. The frequency of the signal source was set at 91.3 MHz and was constantly monitored by an Anritsu Model ML521B measuring receiver calibrated 6-05.

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.



Directional Antenna System For WUKY, Lexington, Kentucky

(Continued)

The signals received by the dipole system were fed to the test building by way of two buried Heliac cables to an Anritsu Model ML521B measuring receiver. This data was interfaced to a Hewlett-Packard Laser Jet 4P printer by means of a Pentium computer system. Relative field strength was plotted as a function of azimuth.

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 8 half-wavelength spaced bays using one driven circular polarized radiating element per bay, two horizontal parasitic elements per bay and three vertical parasitic elements interleaved between alternate bay pairs. 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 MP-8AC-DA-HW array is to be mounted on a pole off the North 237 degrees East tower leg of the 7' face tower at a bearing of North 285 degrees East. Blue prints provided with the antenna will show the proper antenna orientation alignment along with the location of the feed lines that extend through the aperture of the antenna. 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 100 kilowatts (20.000 dBk).

The power at North 10-180 degrees East does not exceed 19.01 kilowatts (12.790 dBk).

Directional Antenna System
For
WUKY, Lexington, Kentucky

(Continued)

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 57 feet 7 inches.

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 75 ft. horizontally of the system. The vertical distance to the nearest obstruction from the directional antenna should be a minimum of 10 ft. from the directional antenna, which includes any FM or DTV antennas. ERI "INVISI-SHEILDS™" are electrically transparent and may be placed within the 10 foot buffer area around the FM directional antenna. Metallic guy wires should be a minimum distance of forty feet horizontally from the antenna.

ELECTRONICS RESEARCH, INC.

A handwritten signature in cursive script, appearing to read "Tom Schaefer", followed by a horizontal line.

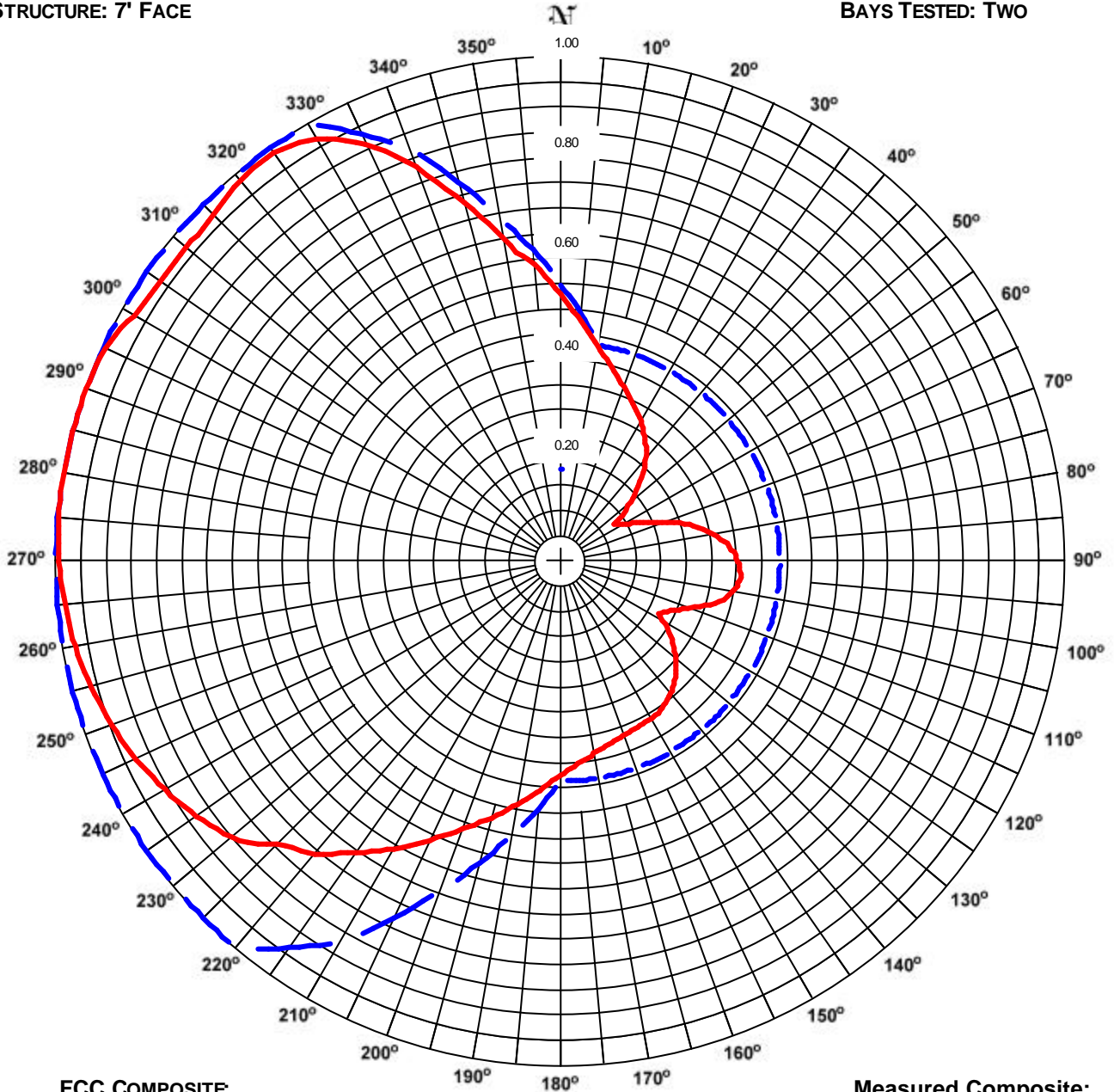
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ERI® *Horizontal Plane Relative Field Pattern*

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: WUKY
LOCATION: LEXINGTON, KY
ANTENNA: MP-8AC-HW-DA
STRUCTURE: 7' FACE

DATE: 6/28/2006
FREQUENCY: 91.3 MHz
ORIENTATION: 285° TRUE
MOUNTING: CUSTOM
BAYS TESTED: TWO



FCC COMPOSITE
RMS: 0.716
MAXIMUM: 1.000 @ 220° TRUE
MINIMUM: 0.436 @ 10° TRUE

Measured Composite:
RMS: 0.645
Maximum: 1.000 @ 280° True
Minimum: 0.129 @ 56° 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 BPED-20050922AFT.

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: WUKY
Location: Lexington, KY
Frequency: 91.3 MHz

Antenna: MP-8AC-HW-DA
Orientation: 285° True
Tower: 7' Face tower

Figure: 1
Date: 6/28/2006
Reference: wuky1m.fig

Angle	Envelope			Polarization	Angle	Envelope			Polarization
	Field	kW	dBk			Field	kW	dBk	
0°	0.530	28.13	14.49	H (and/or) V	180°	0.425	18.03	12.56	H (and/or) V
5°	0.477	22.72	13.56	H (and/or) V	185°	0.455	20.67	13.15	H (and/or) V
10°	0.433	18.72	12.72	H (and/or) V	190°	0.489	23.89	13.78	H (and/or) V
15°	0.398	15.85	12.00	H (and/or) V	195°	0.526	27.62	14.41	H (and/or) V
20°	0.369	13.59	11.33	H (and/or) V	200°	0.565	31.92	15.04	H (and/or) V
25°	0.344	11.82	10.73	H (and/or) V	205°	0.609	37.12	15.70	H (and/or) V
30°	0.320	10.26	10.11	H (and/or) V	210°	0.657	43.16	16.35	H (and/or) V
35°	0.294	8.63	9.36	H (and/or) V	215°	0.705	49.67	16.96	H (and/or) V
40°	0.263	6.93	8.41	H (and/or) V	220°	0.756	57.15	17.57	H (and/or) V
45°	0.223	4.97	6.96	H (and/or) V	225°	0.792	62.67	17.97	H (and/or) V
50°	0.185	3.43	5.36	H (and/or) V	230°	0.849	72.13	18.58	H (and/or) V
55°	0.134	1.80	2.55	H (and/or) V	235°	0.879	77.32	18.88	H (and/or) V
60°	0.149	2.23	3.48	H (and/or) V	240°	0.904	81.79	19.13	H (and/or) V
65°	0.184	3.37	5.28	H (and/or) V	245°	0.927	85.85	19.34	H (and/or) V
70°	0.228	5.19	7.16	H (and/or) V	250°	0.946	89.45	19.52	H (and/or) V
75°	0.274	7.52	8.76	H (and/or) V	255°	0.962	92.56	19.66	H (and/or) V
80°	0.310	9.64	9.84	H (and/or) V	260°	0.976	95.16	19.78	H (and/or) V
85°	0.337	11.33	10.54	H (and/or) V	265°	0.986	97.22	19.88	H (and/or) V
90°	0.353	12.44	10.95	H (and/or) V	270°	0.994	98.72	19.94	H (and/or) V
95°	0.359	12.88	11.10	H (and/or) V	275°	0.998	99.65	19.98	H (and/or) V
100°	0.348	12.09	10.82	H (and/or) V	280°	1.000	100.00	20.00	H (and/or) V
105°	0.318	10.11	10.05	H (and/or) V	285°	1.000	100.00	20.00	H (and/or) V
110°	0.271	7.36	8.67	H (and/or) V	290°	1.000	100.00	20.00	H (and/or) V
115°	0.234	5.48	7.39	H (and/or) V	295°	0.996	99.20	19.96	H (and/or) V
120°	0.235	5.53	7.43	H (and/or) V	300°	0.976	95.22	19.79	H (and/or) V
125°	0.270	7.30	8.63	H (and/or) V	305°	0.969	93.96	19.73	H (and/or) V
130°	0.300	8.97	9.53	H (and/or) V	310°	0.967	93.56	19.71	H (and/or) V
135°	0.323	10.45	10.19	H (and/or) V	315°	0.973	94.74	19.77	H (and/or) V
140°	0.341	11.66	10.67	H (and/or) V	320°	0.986	97.21	19.88	H (and/or) V
145°	0.354	12.52	10.98	H (and/or) V	325°	0.989	97.78	19.90	H (and/or) V
150°	0.361	13.01	11.14	H (and/or) V	330°	0.966	93.23	19.70	H (and/or) V
155°	0.362	13.14	11.19	H (and/or) V	335°	0.913	83.40	19.21	H (and/or) V
160°	0.367	13.43	11.28	H (and/or) V	340°	0.832	69.18	18.40	H (and/or) V
165°	0.375	14.03	11.47	H (and/or) V	345°	0.736	54.19	17.34	H (and/or) V
170°	0.387	14.95	11.75	H (and/or) V	350°	0.652	42.45	16.28	H (and/or) V
175°	0.403	16.22	12.10	H (and/or) V	355°	0.590	34.84	15.42	H (and/or) V

Polarization:
Maximum Field:
Minimum Field:
RMS:
Maximum ERP:
Maximum Power Gain:

Envelope
1.000 @ 280° True
0.129 @ 56° True
0.645
100.000 kW
6.342 (8.023 dB)

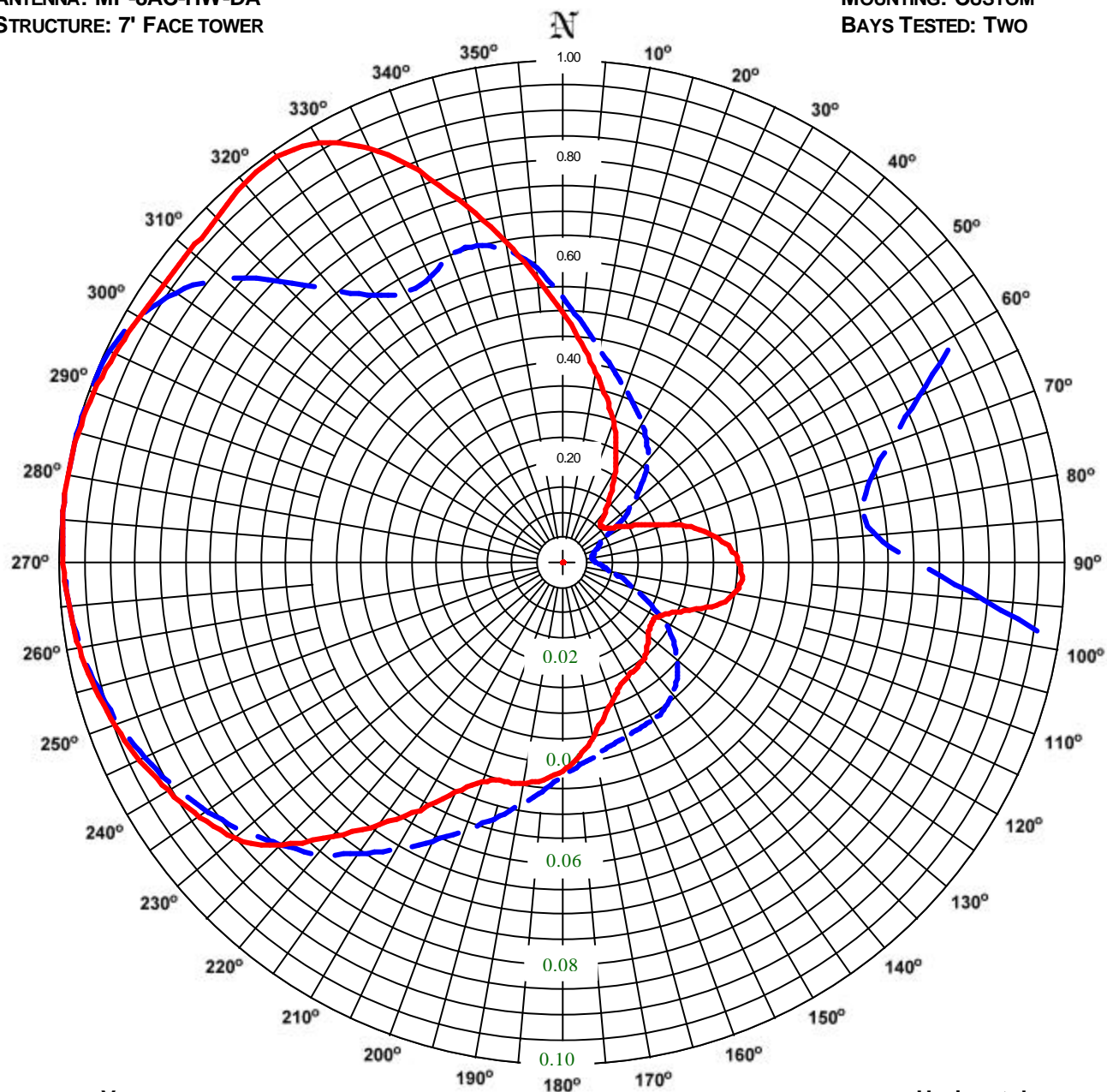
Total Input Power: 15.767 kW

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: WUKY
LOCATION: LEXINGTON, KY
ANTENNA: MP-8AC-HW-DA
STRUCTURE: 7' FACE TOWER

DATE: 6/28/2006
FREQUENCY: 91.3 MHz
ORIENTATION: 285° TRUE
MOUNTING: CUSTOM
BAYS TESTED: TWO



VERTICAL

RMS: 0.601
MAXIMUM: 1.000 @ 280° TRUE
MINIMUM: 0.061 @ 81° TRUE

10X Scale

Horizontal

RMS: 0.627
Maximum: 1.000 @ 280° True
Minimum: 0.107 @ 46° 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: WUKY
Location: Lexington, KY
Frequency: 91.3 MHz

Antenna: MP-8AC-HW-DA
Orientation: 285° True
Tower: 7' Face tower

Figure: 2
Date: 6/28/2006
Reference: wuky1m.fig

Angle	Horizontal			Vertical			Angle	Horizontal			Vertical		
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	kW	dBk
0°	0.501	25.13	14.00	0.530	28.13	14.49	180°	0.413	17.03	12.31	0.425	18.03	12.56
5°	0.440	19.33	12.86	0.477	22.72	13.56	185°	0.432	18.66	12.71	0.455	20.67	13.15
10°	0.386	14.88	11.73	0.433	18.72	12.72	190°	0.444	19.71	12.95	0.489	23.89	13.78
15°	0.341	11.60	10.64	0.398	15.85	12.00	195°	0.448	20.11	13.03	0.526	27.62	14.41
20°	0.301	9.04	9.56	0.369	13.59	11.33	200°	0.463	21.45	13.31	0.565	31.92	15.04
25°	0.253	6.41	8.07	0.344	11.82	10.73	205°	0.503	25.25	14.02	0.609	37.12	15.70
30°	0.213	4.55	6.58	0.320	10.26	10.11	210°	0.566	32.09	15.06	0.657	43.16	16.35
35°	0.168	2.81	4.48	0.294	8.63	9.36	215°	0.634	40.19	16.04	0.705	49.67	16.96
40°	0.132	1.74	2.39	0.263	6.93	8.41	220°	0.709	50.34	17.02	0.756	57.15	17.57
45°	0.108	1.17	0.68	0.223	4.97	6.96	225°	0.791	62.62	17.97	0.792	62.67	17.97
50°	0.111	1.23	0.91	0.185	3.43	5.36	230°	0.849	72.13	18.58	0.829	68.72	18.37
55°	0.125	1.57	1.95	0.134	1.80	2.55	235°	0.879	77.32	18.88	0.861	74.16	18.70
60°	0.149	2.23	3.48	0.091	0.82	-0.84	240°	0.904	81.79	19.13	0.890	79.21	18.99
65°	0.184	3.37	5.28	0.078	0.61	-2.12	245°	0.927	85.85	19.34	0.916	83.82	19.23
70°	0.228	5.19	7.16	0.069	0.48	-3.19	250°	0.946	89.45	19.52	0.938	87.92	19.44
75°	0.274	7.52	8.76	0.063	0.40	-3.95	255°	0.962	92.56	19.66	0.956	91.47	19.61
80°	0.310	9.64	9.84	0.061	0.37	-4.32	260°	0.976	95.16	19.78	0.972	94.45	19.75
85°	0.337	11.33	10.54	0.063	0.40	-4.02	265°	0.986	97.22	19.88	0.984	96.81	19.86
90°	0.353	12.44	10.95	0.071	0.50	-2.99	270°	0.994	98.72	19.94	0.993	98.53	19.94
95°	0.359	12.88	11.10	0.084	0.71	-1.47	275°	0.998	99.65	19.98	0.998	99.60	19.98
100°	0.348	12.09	10.82	0.104	1.07	0.31	280°	1.000	100.00	20.00	1.000	100.00	20.00
105°	0.318	10.11	10.05	0.129	1.65	2.18	285°	0.998	99.59	19.98	1.000	100.00	20.00
110°	0.271	7.36	8.67	0.159	2.53	4.03	290°	0.993	98.51	19.93	1.000	100.00	20.00
115°	0.234	5.48	7.39	0.195	3.81	5.81	295°	0.984	96.76	19.86	0.996	99.20	19.96
120°	0.215	4.64	6.67	0.235	5.53	7.43	300°	0.975	95.02	19.78	0.976	95.22	19.79
125°	0.215	4.62	6.65	0.270	7.30	8.63	305°	0.969	93.96	19.73	0.939	88.15	19.45
130°	0.224	5.00	6.99	0.300	8.97	9.53	310°	0.967	93.56	19.71	0.885	78.36	18.94
135°	0.239	5.71	7.56	0.323	10.45	10.19	315°	0.973	94.74	19.77	0.794	63.06	18.00
140°	0.250	6.27	7.98	0.341	11.66	10.67	320°	0.986	97.21	19.88	0.709	50.24	17.01
145°	0.255	6.49	8.12	0.354	12.52	10.98	325°	0.989	97.78	19.90	0.652	42.49	16.28
150°	0.259	6.72	8.28	0.361	13.01	11.14	330°	0.966	93.23	19.70	0.623	38.86	15.90
155°	0.271	7.35	8.67	0.362	13.14	11.19	335°	0.913	83.40	19.21	0.626	39.21	15.93
160°	0.291	8.44	9.26	0.367	13.43	11.28	340°	0.832	69.18	18.40	0.651	42.35	16.27
165°	0.317	10.07	10.03	0.375	14.03	11.47	345°	0.736	54.19	17.34	0.654	42.83	16.32
170°	0.352	12.36	10.92	0.387	14.95	11.75	350°	0.652	42.45	16.28	0.633	40.07	16.03
175°	0.386	14.89	11.73	0.403	16.22	12.10	355°	0.571	32.66	15.14	0.590	34.84	15.42

Polarization:	Horizontal	Vertical
Maximum Field:	1.000 @ 280° True	1.000 @ 280° True
Minimum Field:	0.107 @ 46° True	0.061 @ 81° True
RMS:	0.627	0.601
Maximum ERP:	100.000 kW	100.000 kW
Maximum Power Gain:	6.342 (8.023 dB)	6.342 (8.023 dB)

Total Input Power: 15.767 kW



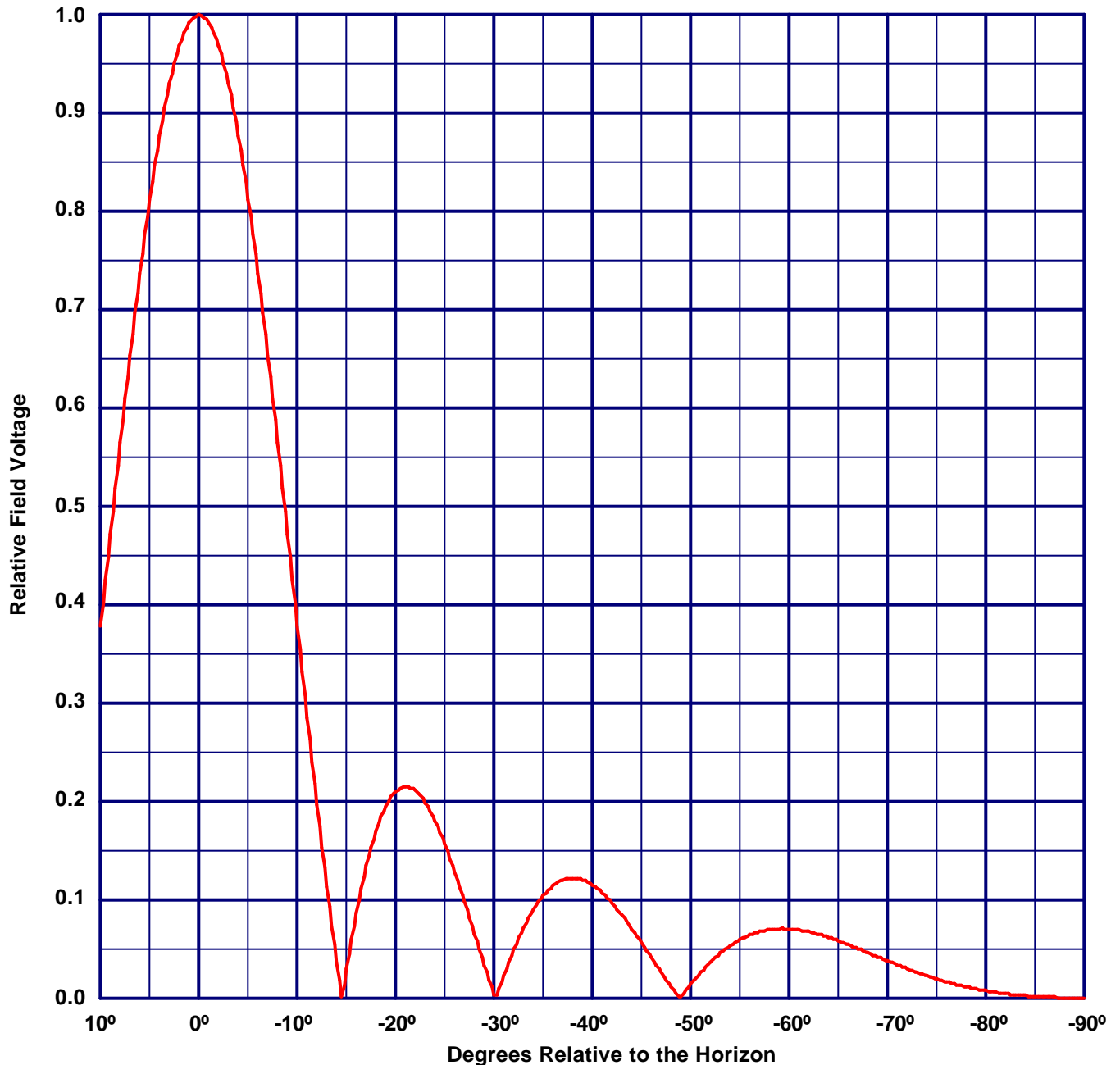
Vertical Plane Relative Field Pattern

WUKY, Lexington, KY, 91.3 MHz

Figure#: 3

Date: 6/28/2006

**An 8 level, .5 wave-length spaced MP-8AC-HW-DA directional antenna
with 0° beam tilt, 0% null fill and a H/V maximum power ratio of 1.000**



Vertical Polarization Gain:

Maximum: 6.342 (8.023 dB)

Horizontal Plane: 6.342 (8.023 dB)

Horizontal Polarization Gain:

Maximum: 6.342 (8.023 dB)

Horizontal Plane: 6.342 (8.023 dB)

Directional Antenna System for WUKY, Lexington, Kentucky

(Continued)

ANTENNA SPECIFICATIONS

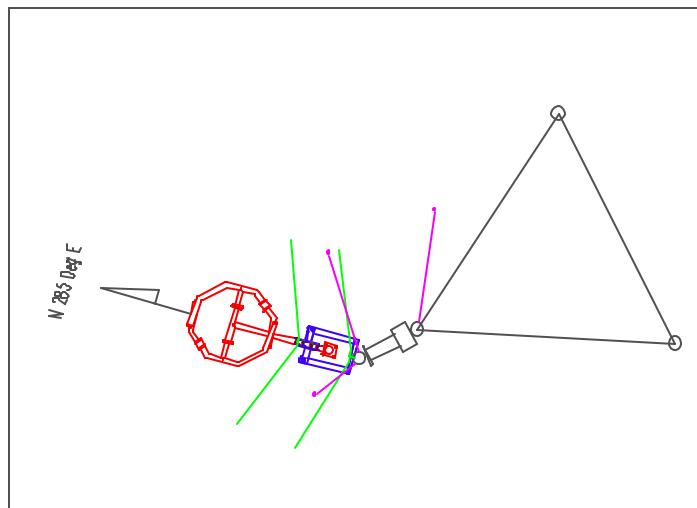
Antenna Type:	MP-8AC-DA-HW
Frequency:	91.3 MHz
Number of Bays:	eight

MECHANICAL SPECIFICATIONS

Mounting:	Custom
System length:	41 ft 6 in
Aperture length required:	57 ft 7 in
Orientation:	285° true
Input flange to the antenna 3 1/8 inch female	

ELECTRICAL SPECIFICATIONS (For directional use)

Maximum horizontal ERP:	100 kW (20 dBk)
Horizontal maximum power gain:	6.342 (8.023 dB)
Maximum vertical ERP:	100 kW (20 dBk)
Vertical maximum power gain:	6.342 (8.023 dB)
Total input power:	15.767 kW (11.977 dBk)





2670 WILHITE DRIVE
LEXINGTON, KY 40503
PHONE 859-277-8700 • FAX 859-277-8901
WWW.PHOTOSCIENCE.COM

October 26, 2006

Gordon W. Brandenburg
WUKY
340 McVey Hall
University of Kentucky
Lexington, KY 40506-0045

RE: WUKY FM 91.3 Antenna Systems at Lexington, Kentucky

To Whom It May Concern:

On October 6, 2006, I surveyed the WUKY antenna mounted on the northwest leg of the KET (WKLE) 46 Lexington-Richmond tower on Igo Road, in Madison County, Kentucky and verified that it is oriented to 285° True Azimuth.

Sincerely,

A handwritten signature in cursive script, appearing to read "Anthony F. Stith", is written over the printed name and stamp.

Anthony F. Stith
Professional Land Surveyor 1877



10/26/2006



listen

WUKY 91.3FM

340 McVey Hall

University of Kentucky

Lexington, KY 40506-0045

Tel 859.257-3221

Fax 859.257-6291

Marketing 859.257-7049

Newsroom 859.257-9859

Web www.wuky.org

National Public Radio

Public Radio International

Engineer's Declaration

I, Gordon W. Brandenburg, subject to the penalties of perjury, do declare the following:

1.) That I am an employee of University of Kentucky and chief engineer for WUKY

2.) University of Kentucky is the permittee of WUKY Lexington, KY, construction permit No.BPED-20050922AFT.

3.) That I am familiar with the terms and conditions of the WUKY Construction Permit.

4.) I hereby certify that I have overseen the installation of the WUKY Directional antenna and that the installation was complete to the manufacturer's instructions.

Gordon W. Brandenburg
340 McVey Hall
Lexington, Ky 40506-0045
November 2, 2006