

**APPLICATION FOR STATION LICENSE/
REQUEST FOR PROGRAM TEST AUTHORITY
SEVEN RIVERS BROADCAST MINISTRY, INC.**

**WHGN (FM) RADIO STATION
CH 220C2 - 91.9 MHZ - 41.0 KW
CRYSTAL RIVER, FLORIDA**

February 2002

EXHIBIT A1

Effective Radiated Power:

Horizontal	41.0 kilowatts
Vertical	39.3 kilowatts

Antenna:

	ERI MP-4E-DA-HW
	4 bay half wavelength
Horizontal gain	2.800
Vertical gain	2.684

Transmission Line:
(479 feet)

Andrew Corp. HJ8-50B
3" air dielectric
86.3% efficiency

Required Transmitter Power Output
to Reach Effective Radiated Power:

16.967 kilowatts

Facilities Authorized:

Channel 220C2 - 91.9 MHz

Effective Radiated Power:

Horizontal	41.0 kilowatts
Vertical	39.3 kilowatts

Geographic Coordinates:

North Latitude 28° 50' 29"
West Longitude 82° 30' 21"

Antenna Center of Radiation:

Above Ground	140 meters
Above MSL	165 meters
HAAT	147 meters

FCC Tower Registration No.:

1217420



7777 Gardner Rd. Chandler, In 47610 Phone (812) 925-6000 Fax (812) 925-4030

**Directional Antenna System
For
WXJC, Crystal River, Florida**

August 25, 2000

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 WXJC.

The antenna is the ERI model MP-4E-DA-HW configuration. The circular system consists of 4 half-wavelength spaced bays using one driven circular polarized radiating element per bay, one horizontal parasitic element per bay and four vertical parasitic elements interleaved between alternate bay pairs. The antenna was mounted on the North 341 degrees East tower face with bracketry to provide an antenna orientation of North 341 degrees East. The antenna was tested on a 24" **ERI[®] λ MOUNTING SYSTEM**, as measured from leg centers, which is the structure the station plans to use to support the array. All tests were performed on a frequency of 91.9 megahertz which is the center of the FM broadcast channel assigned to WXJC.

Pattern measurements were made on a sixty-acre antenna pattern range which 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.

**EXHIBIT A2
APPLICATION FOR STATION LICENSE/
REQUEST FOR PROGRAM TEST AUTHORITY
WHGN (FM) RADIO STATION
CRYSTAL RIVER, FLORIDA
February 2002**

Directional Antenna System For WXJC, Crystal River, Florida

(Continued)

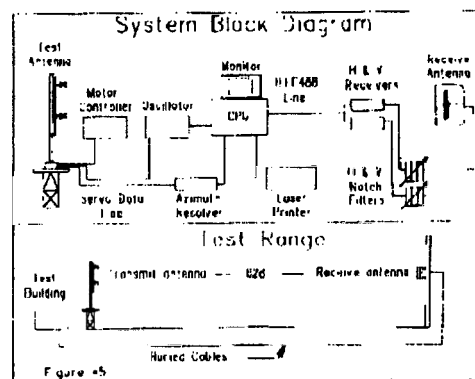
DESCRIPTION OF THE TEST PROCEDURE

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 24" **ERI[®] λ MOUNTING SYSTEM**, 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 azimuth indicating mechanism, resolution of this azimuth measuring device is one-tenth of a degree.

The antenna under test was operated in the transmitting mode and fed from a Wavetek Model 3000 signal generator. The frequency of the signal source was set at 91.9 MHz and was constantly monitored by an Anritsu Model ML521B measuring receiver.



Directional Antenna System For WXJC, Crystal River, Florida

(Continued)

A broad-band 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 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 co-ordinated graph paper in a clockwise direction. Both horizontal and vertical components were recorded separately.

CONCLUSIONS

The circular polarized system consists of 4 half-wavelength spaced bays using one driven circular polarized radiating element per bay, one horizontal parasitic element per bay and four 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-4E-DA-HW array is to be mounted on the North 341 degrees East tower face of the 24" **ERI**® λ **MOUNTING SYSTEM**, at a bearing of North 341 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 41 kilowatts (16.128 dBk).

Directional Antenna System For WXJC, Crystal River, Florida

(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 31 feet if the antenna is to be top mounted.

The directional antenna should not be mounted on the top of an antenna tower which 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 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.

Directional Antenna System For WXJC, Crystal River, Florida

(Continued)

ANTENNA SPECIFICATIONS

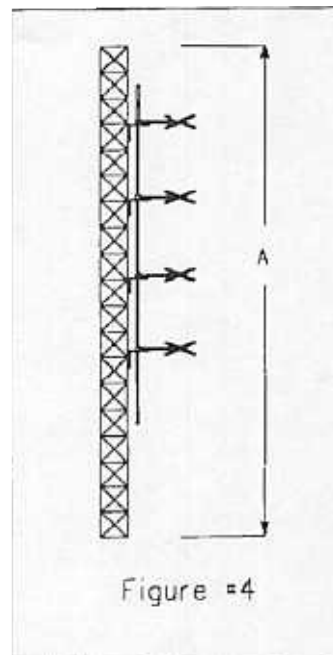
Antenna Type:	MP-4E-DA-HW
Frequency:	91.9 MHz
Number of Bays:	4

MECHANICAL SPECIFICATIONS

Mounting:	Standard
System length:	24 ft 10 in
Aperture length required:	31 ft.
Orientation:	341° true
Input flange to the antenna 3 1/8 inch female	

ELECTRICAL SPECIFICATIONS (For directional use)

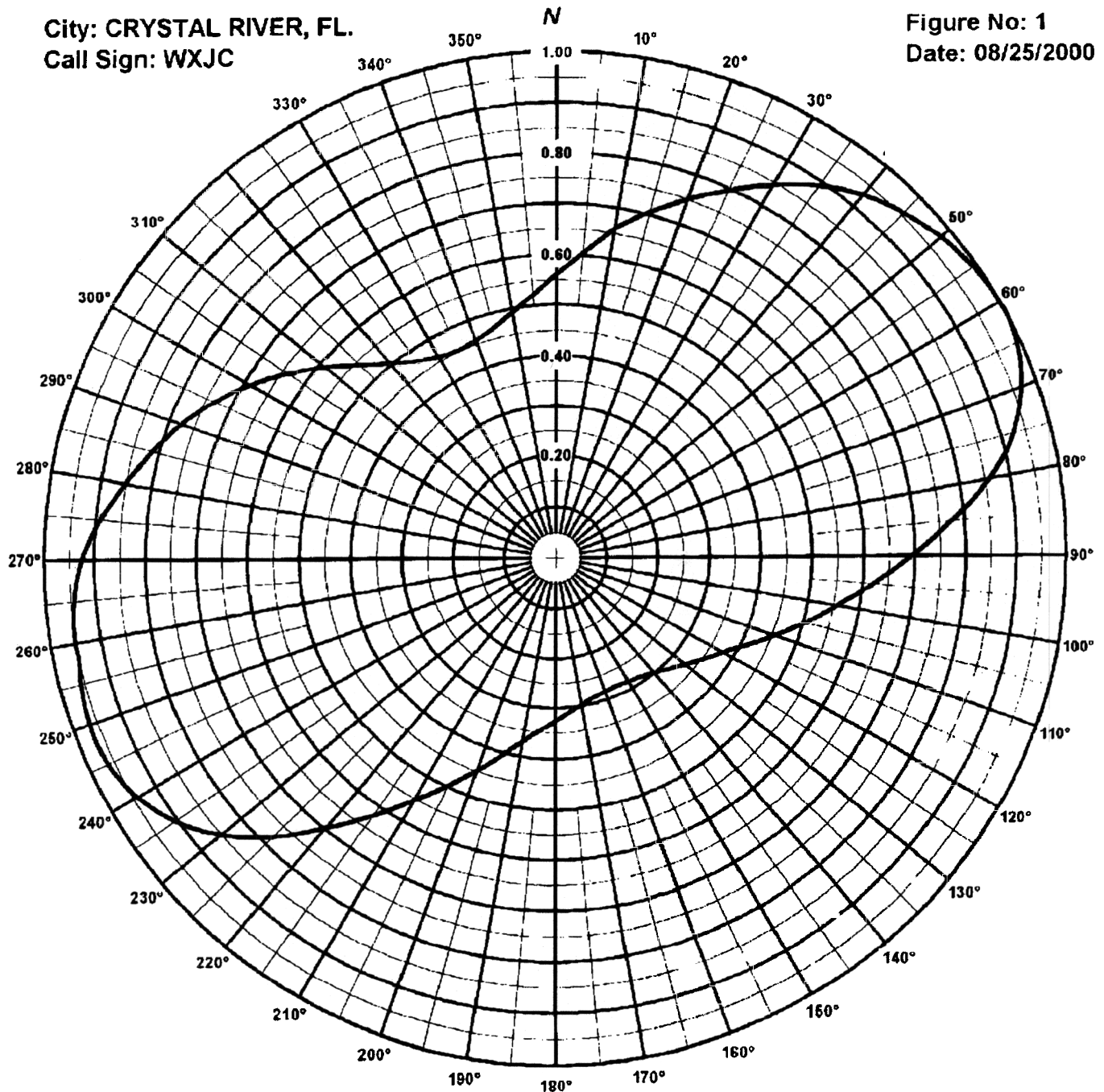
Maximum horizontal ERP:	41 kW (16.128 dBk)
Horizontal maximum power gain:	2.800 (4.472 dB)
Maximum vertical ERP:	39.300 kW (15.944 dBk)
Vertical maximum power gain:	2.684 (4.288 dB)
Total input power:	14.643 kW (11.656 dBk)



***ERI* Horizontal Plane Envelope Pattern**

City: CRYSTAL RIVER, FL.
Call Sign: WXJC

Figure No: 1
Date: 08/25/2000



Frequency: 91.9 MHz
Antenna Type: MP-4E-DA-HW
Antenna Orientation: 341° True
Antenna Mounting: Standard
Tower Type 24" Lambda

Envelope

RMS: .681
Maximum: 1 @ 61°
Minimum: .282 @ 156°

Composite pattern: This pattern shows the maximum of either the H or V azimuth values.



Horizontal Plane Relative Field Pattern

Figure# 1

Station: WXJC

Location: CRYSTAL RIVER, FL

Frequency: 91.9 MHz

Date: 08/25/2000

Antenna: MP-4E-DA-HW

Antenna Orientation: 341° True

Number of Bays: 4

Azimuth	Envelope			Polarization		Envelope			Polarization
	Field	kW	dBk			Field	kW	dBk	
0°	0.559	12.830	11.082	Vertical		0.326	4.369	6.404	Horizontal
5°	0.605	15.012	11.764	Vertical		0.346	4.922	6.921	Horizontal
10°	0.659	17.803	12.505	Vertical		0.372	5.673	7.538	Horizontal
15°	0.705	20.389	13.094	Vertical		0.407	6.786	8.316	Horizontal
20°	0.751	23.142	13.644	Vertical		0.449	8.266	9.173	Horizontal
25°	0.797	26.053	14.159	Vertical		0.497	10.148	10.064	Horizontal
30°	0.845	29.250	14.661	Vertical		0.553	12.541	10.983	Horizontal
35°	0.891	32.570	15.128	Vertical		0.622	15.848	12.000	Horizontal
40°	0.929	35.377	15.487	Vertical		0.697	19.927	12.994	Horizontal
45°	0.956	37.477	15.738	Vertical		0.780	24.964	13.973	Horizontal
50°	0.979	39.258	15.939	Horizontal		0.851	29.701	14.728	Horizontal
55°	0.993	40.442	16.068	Horizontal		0.905	33.587	15.262	Horizontal
60°	1.000	40.973	16.125	Horizontal		0.942	36.397	15.611	Horizontal
65°	0.993	40.418	16.066	Horizontal		0.962	37.977	15.795	Horizontal
70°	0.968	38.412	15.845	Horizontal		0.966	38.227	15.824	Horizontal
75°	0.925	35.092	15.452	Horizontal		0.958	37.646	15.757	Horizontal
80°	0.859	30.239	14.806	Horizontal		0.951	37.094	15.693	Vertical
85°	0.774	24.586	13.907	Horizontal		0.944	36.522	15.626	Vertical
90°	0.694	19.724	12.950	Horizontal		0.924	35.017	15.443	Vertical
95°	0.621	15.823	11.993	Horizontal		0.892	32.640	15.138	Vertical
100°	0.556	12.694	11.036	Horizontal		0.852	29.777	14.739	Vertical
105°	0.503	10.377	10.161	Horizontal		0.814	27.141	14.336	Vertical
110°	0.455	8.483	9.285	Horizontal		0.776	24.716	13.930	Vertical
115°	0.412	6.967	8.430	Horizontal		0.733	22.016	13.427	Vertical
120°	0.378	5.848	7.670	Vertical		0.688	19.402	12.879	Vertical
125°	0.353	5.101	7.076	Vertical		0.638	16.702	12.228	Vertical
130°	0.331	4.494	6.527	Vertical		0.590	14.269	11.544	Vertical
135°	0.313	4.024	6.047	Vertical		0.542	12.026	10.801	Vertical
140°	0.300	3.689	5.670	Vertical		0.504	10.405	10.172	Vertical
145°	0.290	3.444	5.371	Horizontal		0.476	9.306	9.688	Vertical
150°	0.284	3.317	5.208	Horizontal		0.460	8.661	9.376	Vertical
155°	0.282	3.262	5.135	Horizontal		0.453	8.425	9.256	Vertical
160°	0.283	3.294	5.177	Horizontal		0.458	8.608	9.349	Vertical
165°	0.289	3.415	5.334	Horizontal		0.471	9.106	9.593	Vertical
170°	0.298	3.629	5.598	Horizontal		0.492	9.944	9.976	Vertical
175°	0.310	3.943	5.959	Horizontal		0.522	11.166	10.479	Vertical

Envelope Maximum Relative Field: 1.000 Azimuth: 61° True

Envelope Minimum Relative Field: 0.282 Azimuth: 156° True

Envelope RMS: 0.681

Maximum Horizontal ERP: 41.000 kW

Maximum Vertical ERP: 39.300 kW

Total Input Power: 14.643 kW

Maximum Horizontal Power Gain of the Complete Array: 2.800 (4.472 dB)

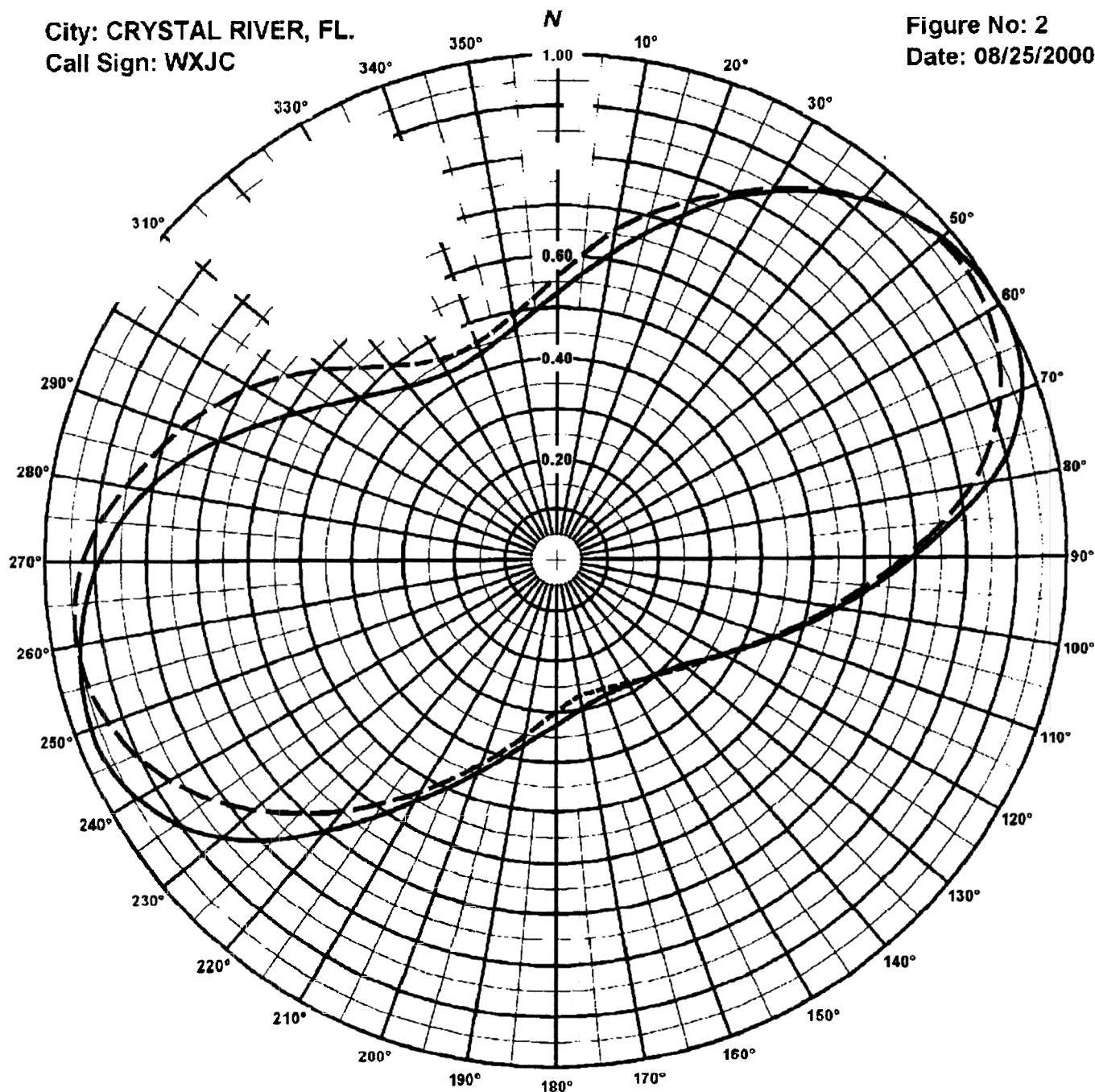
Maximum Vertical Power Gain of the Complete Array: 2.684 (4.288 dB)

Reference: WXJC1.FIG

ERI Horizontal Plane Relative Field Pattern

City: CRYSTAL RIVER, FL.
Call Sign: WXJC

Figure No: 2
Date: 08/25/2000



Frequency: 91.9 MHz

Antenna Type: MP-4E-DA-HW

Antenna Orientation: 341° True

Antenna Mounting: Standard

Tower Type 24" Lambda

VERTICAL

RMS: .666

Maximum: .979 @ 55°

Minimum: .269 @ 165°

HORIZONTAL

RMS: .666

Maximum: 1 @ 61°

Minimum: .282 @ 156°

Measured patterns of the horizontal and vertical components. 1.0 on the graph is relative to 41kW ERP.



Horizontal Plane Relative Field Pattern

Figure# 2

Station: WXJC

Location: CRYSTAL RIVER, FL

Frequency: 91.9 MHz

Date: 08/25/2000

Antenna: MP-4E-DA-HW

Antenna Orientation: 341° True

Number of Bays: 4

Azimuth	Horizontal			Vertical			Azimuth	Horizontal			Vertical	
	Field	kW	dBk	Field	kW	dBk		Field	kW	dBk	Field	dBk
0°	0.528	11.444	10.586	0.559	12.830	11.082		0.328	4.369	6.404	0.300	5.662
5°	0.567	13.185	11.201	0.605	15.012	11.764		0.346	4.922	6.921	0.323	6.305
10°	0.612	15.361	11.864	0.659	17.803	12.505		0.372	5.673	7.538	0.352	7.062
15°	0.663	18.042	12.563	0.705	20.389	13.094		0.407	6.786	8.316	0.388	7.904
20°	0.721	21.307	13.285	0.751	23.142	13.644		0.449	8.266	9.173	0.430	8.801
25°	0.783	25.154	14.006	0.797	26.053	14.159		0.497	10.148	10.064	0.478	9.713
30°	0.839	28.832	14.599	0.845	29.250	14.661		0.553	12.541	10.983	0.531	10.625
35°	0.886	32.169	15.074	0.891	32.570	15.128		0.622	15.848	12.000	0.588	11.515
40°	0.925	35.067	15.449	0.929	35.377	15.487		0.697	19.927	12.994	0.649	12.369
45°	0.956	37.451	15.735	0.956	37.477	15.738		0.780	24.964	13.973	0.708	13.124
50°	0.979	39.258	15.939	0.973	38.799	15.888		0.851	29.701	14.728	0.769	13.844
55°	0.993	40.442	16.068	0.979	39.300	15.944		0.905	33.587	15.262	0.824	14.443
60°	1.000	40.973	16.125	0.972	38.723	15.880		0.942	36.397	15.611	0.869	14.906
65°	0.993	40.418	16.066	0.953	37.204	15.706		0.962	37.977	15.795	0.904	15.252
70°	0.988	38.412	15.845	0.921	34.801	15.416		0.966	38.227	15.824	0.930	15.494
75°	0.925	35.092	15.452	0.878	31.605	14.998		0.958	37.646	15.757	0.945	15.639
80°	0.859	30.239	14.806	0.823	27.747	14.432		0.943	36.496	15.622	0.951	15.693
85°	0.774	24.586	13.907	0.755	23.388	13.690		0.921	34.805	15.416	0.944	15.626
90°	0.694	19.724	12.950	0.679	18.916	12.768		0.892	32.612	15.134	0.924	15.443
95°	0.621	15.823	11.993	0.608	15.179	11.813		0.855	29.972	14.767	0.892	15.138
100°	0.556	12.694	11.036	0.548	12.307	10.902		0.811	26.950	14.306	0.852	14.739
105°	0.503	10.377	10.161	0.495	10.049	10.021		0.759	23.628	13.734	0.814	14.336
110°	0.455	8.483	9.285	0.449	8.272	9.176		0.700	20.099	13.032	0.776	13.930
115°	0.412	6.967	8.430	0.409	6.871	8.370		0.640	16.773	12.246	0.733	13.427
120°	0.376	5.782	7.621	0.378	5.848	7.670		0.587	14.109	11.495	0.688	12.879
125°	0.348	4.962	6.956	0.353	5.101	7.076		0.541	12.009	10.795	0.638	12.228
130°	0.325	4.342	6.377	0.331	4.494	6.527		0.503	10.388	10.166	0.590	11.544
135°	0.310	3.929	5.943	0.313	4.024	6.047		0.473	9.176	9.627	0.542	10.801
140°	0.298	3.646	5.618	0.300	3.689	5.670		0.450	8.317	9.200	0.504	10.172
145°	0.290	3.444	5.371	0.289	3.425	5.347		0.435	7.767	8.903	0.476	9.688
150°	0.284	3.317	5.208	0.280	3.225	5.085		0.428	7.499	8.750	0.460	9.376
155°	0.282	3.262	5.135	0.274	3.084	4.891		0.428	7.520	8.762	0.453	9.256
160°	0.283	3.294	5.177	0.270	2.999	4.770		0.436	7.786	8.913	0.458	9.349
165°	0.289	3.415	5.334	0.269	2.967	4.724		0.450	8.285	9.183	0.471	9.593
170°	0.298	3.629	5.598	0.273	3.053	4.847		0.470	9.039	9.561	0.492	9.976
175°	0.310	3.943	5.959	0.283	3.286	5.166		0.496	10.078	10.034	0.522	10.479

Horizontal Maximum Relative Field: 1.000 Azimuth: 61° True

Horizontal Minimum Relative Field: 0.282 Azimuth: 156° True

Vertical Maximum Relative Field: 0.979 Azimuth: 55° True

Vertical Minimum Relative Field: 0.269 Azimuth: 165° True

Horizontal RMS: 0.666

Vertical RMS: 0.666

Maximum Horizontal ERP: 41.000 kW

Maximum Vertical ERP: 39.300 kW

Total Input Power: 14.643 kW

Maximum Horizontal Power Gain of the Complete Array: 2.800 (4.472 dB)

Maximum Vertical Power Gain of the Complete Array: 2.684 (4.288 dB)

Reference: WXJC2.FIG

**The Power to Change
The Power to Build**



January 30, 2002

VIA FAX @ (352) 564-8750 and REGULAR MAIL

Mr. David Boyer
Assistant Station Manager - WHGN
PO Box 1000
Lecanto, Florida 34460

Project No. 91085.00

**RE: Directional Antenna Certification for WHGN - Crystal River, Florida
Seven Rivers Broadcast Ministry, Inc., Licensee**

To Whom It May Concern:

This is to certify that on Wednesday, January 23, 2002, Berryman & Henigan conducted a visit to the antenna site for WHGN (located on County Road 490 near the intersection of State Road No. 44) to determine the as-built orientation of the directional antenna recently erected.

As a result of our site visit, we have field verified and find that the antenna (as constructed and installed) is oriented on a North Azimuth of 341° (True) in accordance with the Installation Detail (Drawing 1A-1) for Station WHGN (91.9 Mhz) prepared by Electronics Research, Inc. of Chandler, Indiana, Project No. 07935 / 5, dated December 18, 2001.

BERRYMAN & HENIGAN

R. Kelly Roberts, P.S.M.
Professional Surveyor and Mapper
Florida Certificate No. 5558

1414 SW Martin Luther King Jr. Avenue • Ocala, FL 34474 • (352) 368-5055 • Fax (352) 368-5063

An Equal Opportunity Employer

**EXHIBIT A3
APPLICATION FOR STATION LICENSE/
REQUEST FOR PROGRAM TEST AUTHORITY
WHGN (FM) RADIO STATION
CRYSTAL RIVER, FLORIDA
February 2002**

Directional Antenna Installation Certification

In compliance with FCC regulation 73.316, section (c), paragraph (8), this is to certify that the ERI model: MP-4E-DA-HW directional antenna for Radio Station WHGN operating at 91.9 Mhz and licensed to Seven Rivers Broadcast Ministry, Inc., has been erected according to design and installation instructions provided by Electronics Research, Incorporated (ERI) of Chandler, Indiana.

This installation was supervised by Mr. Frank Vela Jr. Mr. Vela has been a broadcast engineer for the past 15 years and has supervised similar installations.

Date: 1-24-02

Signature: Frank Vela Jr.

EXHIBIT A4
**APPLICATION FOR STATION LICENSE/
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WHGN (FM) RADIO STATION
CRYSTAL RIVER, FLORIDA
February 2002