

**APPLICATION FOR STATION LICENSE**  
**IMANI COMMUNICATIONS CORPORATION, INC.**  
**WBFZ (FM) RADIO STATION**  
**CH 287C2 - 105.3 MHz**  
**SELMA, ALABAMA**  
**June 2001**

**EXHIBIT #A**

This Statement was prepared on behalf of Imani Communications Corporation, Inc. ( ICC ), permittee of radio station WBFZ, Channel 287C2, Selma, Alabama. ICC holds an outstanding construction permit to construct WBFZ (BPH-19960429MF). This instant application seeks a license to cover this outstanding construction permit.

The WBFZ facilities have been constructed as authorized in the underlying permit. The conditions regarding the directional antenna system are met with the attached certifications from the antenna manufacturer (Exhibit #A2), a licensed surveyor (Exhibit #A3) and the on-site broadcast engineer (Exhibit #A3). Further, a condition was placed on the permit requiring the power of the authorized facility be lowered or operation ceased to ensure that persons having access to the site were not exposed to radio frequency electromagnetic fields in excess of the FCC guidelines. ICC herein restates that it will lower the power of WBFZ or cease operation, as necessary, to ensure that no one is exposed to fields in excess of the FCC limits.

It is noted that, due to the use of a directional antenna system for WBFZ, the vertical polarization power gain of the antenna system is slightly less than that of the horizontal. As such, while the horizontal power is 50.0 kilowatts, the vertical power is 49.0 kilowatts. Thus, the antenna is elliptically polarized.

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**EXHIBIT #A1**

**WBFZ Transmission System Calculations**

Effective Radiated Power:	
Horizontal	50.0 kilowatts
Vertical	49.0 kilowatts
Antennas:	Shively 6810-5-DA 5 bay full wavelength
Horizontal gain	4.14
Vertical gain	4.062
Transmission Line:	Cablewave HCC300-50J
(450 feet)	3 inch air dielectric 88.8% Efficiency
Required Transmitter Power Output To Reach Effective Radiated Power:	13.6 kilowatts

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Facilities Authorized:	Channel 287C2 - 105.3 MHz
Effective Radiated Power:	50.0 kilowatts (H) 49.0 kilowatts (V)
Geographic Coordinates:	North Latitude   32  16' 18" West Longitude   87  15' 28"
Antenna Center of Radiation:	Above Ground   133.0 meters Above MSL       194.0 meters HAAT            150.0 meters
Tower Registration (ASR) #:	1047270

S.O. 21714

Report of Test 6810-5-DA

for

IMANI COMMUNICATIONS CORPORATION INC.

WBFZ SELMA, AL

## OBJECTIVE:

The objective of this test was to demonstrate the directional characteristics of a 6810-5-DA to meet the needs WBFZ and to comply with the requirements of the FCC construction permit, file number BPH-19960429MF.

## RESULTS:

The measured azimuth pattern for the 6810-5-DA is shown in Figure 1. Figure 1A shows the Tabulation of the Horizontal Polarization. Figure 1B shows the Tabulation of the Vertical Polarization. The calculated elevation pattern of the antenna is shown in Figure 3. Construction permit file number BPH-19960429MF indicates that the Horizontal radiation component shall not exceed 50 kW at any azimuth and is restricted to the following values at the azimuths specified:

330 Degrees T: 41.587 kW

340 Degrees T: 39.962 kW

350 Degrees T: 39.962 kW

0 Degrees T: 41.953 kW

From Figure 1, the maximum radiation of the Horizontal component occurs at 70 Degrees T to 79 Degrees T. At the restricted azimuth of 330 Degrees T the Horizontal component is 1.463 dB down from the maximum of 50 kW, or 35.701 kW. At the restricted azimuth of 340 Degrees T the Horizontal component is 1.993 dB down from the maximum of 50 kW, or 31.601 kW.

**EXHIBIT #A2**  
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At the restricted azimuth of 350 Degrees T, the Horizontal component is 2.734 dB down from the maximum of 50 kW, or 26.645 kW. At the restricted azimuth of 0 Degrees T, the Horizontal component is 3.479 dB down from the maximum of 50 kW, or 22.445 kW.

The R.M.S. of the Horizontal component is 0.820. The total Horizontal power gain is 4.140. The R.M.S. of the Vertical component is 0.795. The total Vertical power gain is 4.062. See Figure Four for calculations. The R.M.S. of the FCC composite pattern is 0.960. Therefore this Pattern complies with the FCC requirement of 73.316(c)(2)(ix)(A).

**METHOD OF DIRECTIONALIZATION:**

One bay of the 6810-5-DA was mounted on a tower of exact scale to a Rohn-65 tower. The spacing of the antenna to the tower was varied to achieve the horizontal pattern shown in Figure 1. Vertical parasitic elements were attached to the interbay feedline to achieve the vertical pattern shown in Figure 1. See Figure 2 for mechanical details.

**METHOD OF MEASUREMENT:**

As allowed by the construction permit, file number BPH-19960429MF, a single level of the 6810-5-DA was set up on the Howell Laboratories scale model antenna pattern measuring range. A scale of 4.5:1 was used.

**SUPERVISION:**

The tests were carried out under the direction of Robert A. Surette, Manager of RF Engineering. Mr. Surette was graduated from Lowell Technological Institute, Lowell, Massachusetts in 1973 with the degree of Bachelor of Science in Electrical Engineering. He has been directly involved with both full size and scale model pattern measurements since 1974 as an RF Engineer with Shively Labs and with Dielectric Communications (a unit of General Signal). He is currently an Associate Member of the Association of Federal Communications Consulting Engineers and a Member of IEEE.

**EQUIPMENT:**

The scale model pattern range consists of a wooden rotating pedestal equipped with a position indicator. The scale model bay is placed on the top of this pedestal and is used in the transmission mode at approximately 20 feet above ground level. The receiving corner reflector is spaced 50 feet away from the rotating pedestal at the same level above ground as the transmitting model. The transmitting and receiving signals are carried to a control building by means of RG-9/U double shielded coax cable.

The control building is equipped with:

Hewlett Packard Model 8505 Network Analyzer  
PC Based Controller  
Hewlett Packard 7550A Graphics Plotter

The test equipment is calibrated to MIL-STD-45662.

**TEST PROCEDURES:**

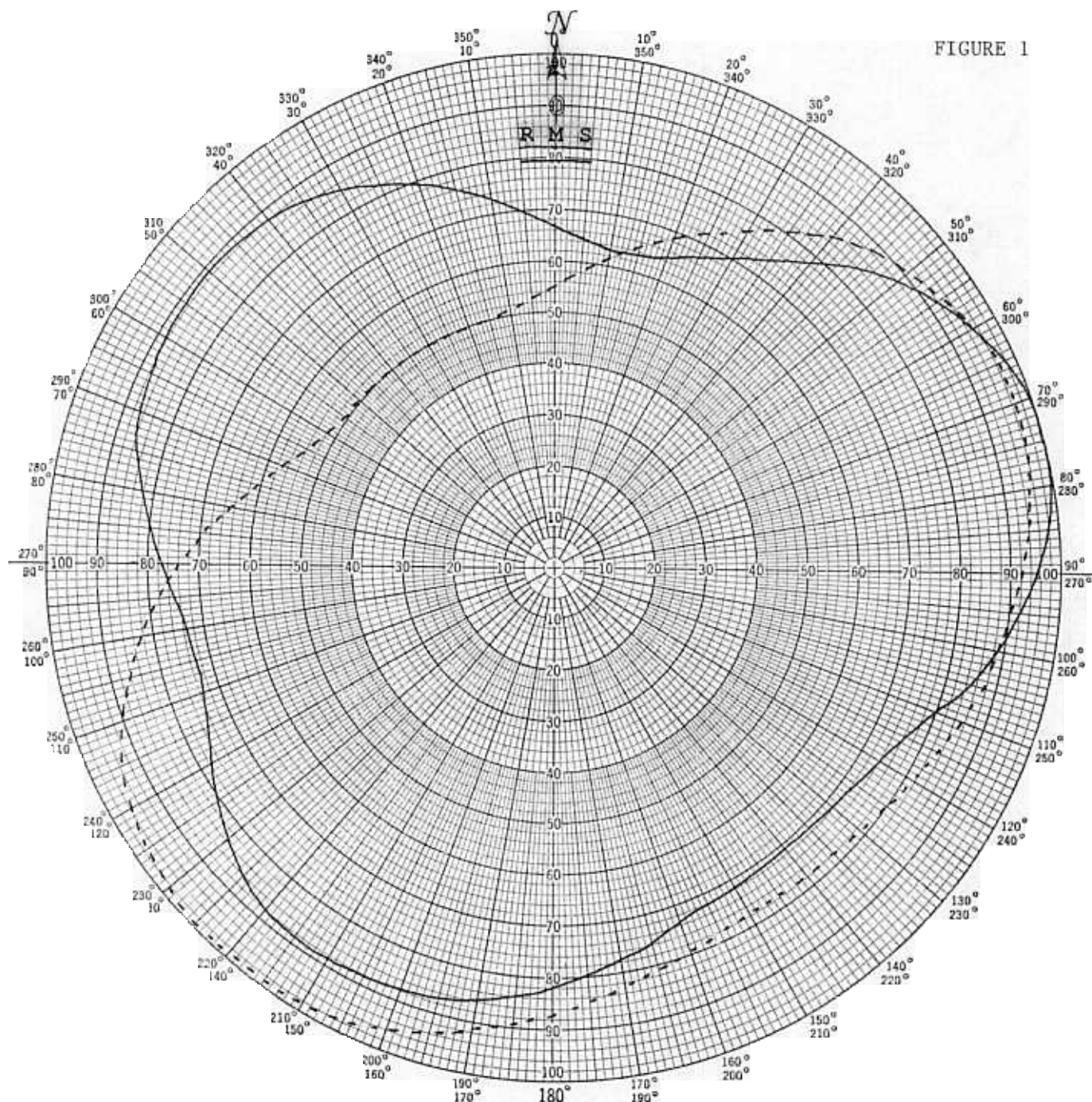
The corner reflector is mounted so that the horizontal and vertical azimuth patterns are measured independently by rotating the corner reflector by 90 degrees. The network analyzer was set to 473.85 MHz. Calibrated pads are used to check the linearity of the measuring system. For example, 6 dB padding yields a scale reading of 50 from an unpadded reading of 100 in voltage. From the recorded patterns, the R.M.S. values are calculated and recorded as shown in Figure 1.

Respectfully submitted by:



Robert A. Surette  
Manager of RF Engineering  
S/O 21,714  
June 12, 2001

FIGURE 1



## Shively Labs

PROJECT NAME WBFZ SELMA, AL  
 PROJECT NUMBER 21,714 DATE 4/3/01  
 MODEL (X) FULL SCALE ( ) FREQUENCY 473.85/105.3 MHz  
 POLARIZATION HORIZ (—); VERT (----  
 CURVE PLOTTED IN: VOLTAGE (X) POWER ( ) DB ( )  
 OBSERVER RAS

ANTENNA TYPE 6810-5-DA  
 PATTERN TYPE \_\_\_\_\_  
 REMARKS: SEE FIGURE 2 FOR MECHANICAL  
DETAILS  
 \_\_\_\_\_  
 \_\_\_\_\_

Figure 1A

S/O 21,714  
 TABULATION OF HORIZONTAL POLARIZATION  
 WBFZ SELMA, AL

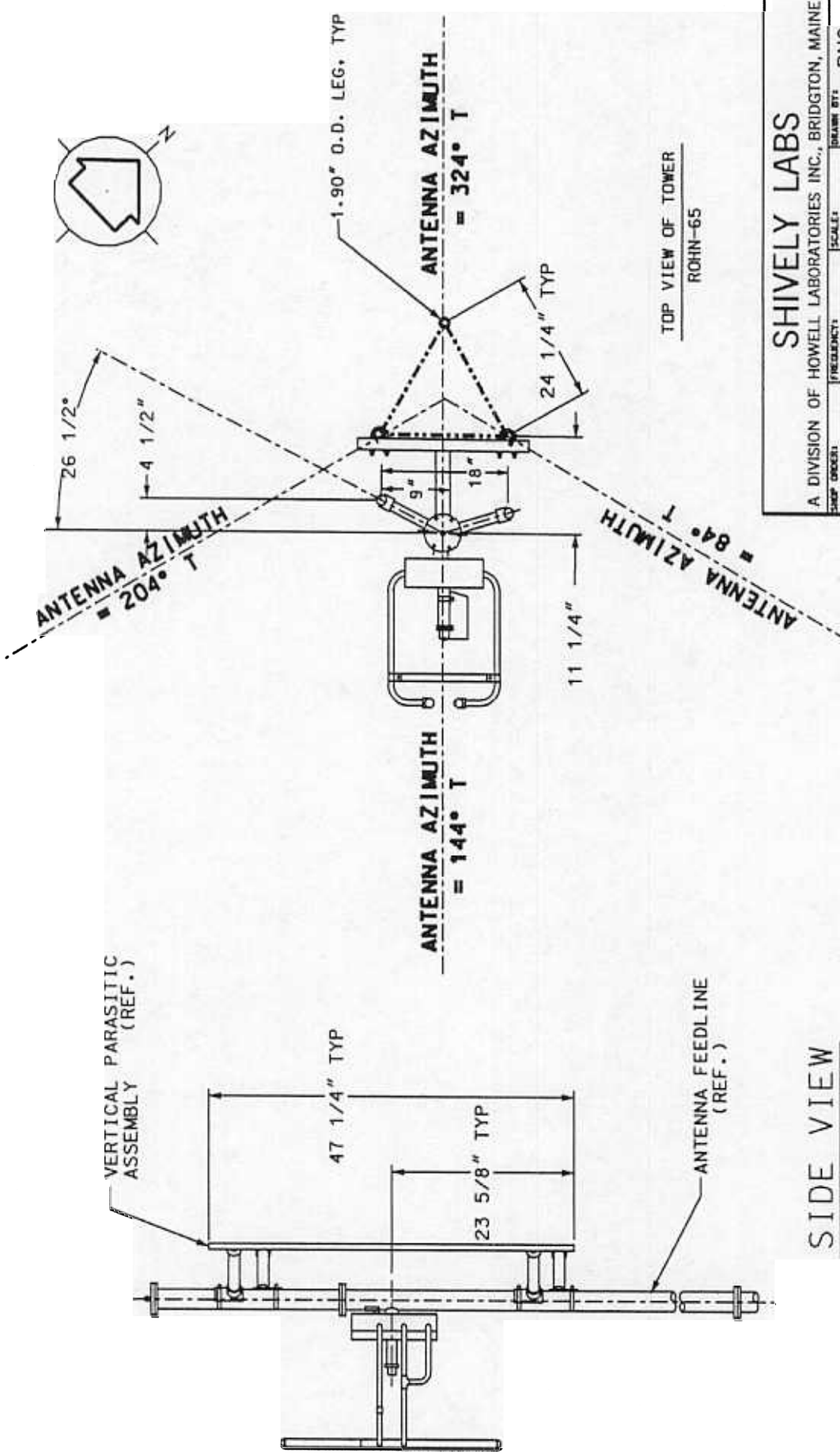
DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.670	180	0.820
10	0.635	190	0.855
20	0.645	200	0.875
30	0.700	210	0.885
40	0.785	220	0.880
45	0.835	225	0.860
50	0.880	230	0.835
60	0.950	240	0.775
70	1.000	250	0.735
80	0.995	260	0.735
90	0.955	270	0.770
100	0.890	280	0.825
110	0.800	290	0.870
120	0.740	300	0.885
130	0.715	310	0.890
135	0.710	315	0.885
140	0.710	320	0.880
150	0.715	330	0.845
160	0.735	340	0.795
170	0.775	350	0.730

Figure 1B

S/O 21,714  
TABULATION OF VERTICAL POLARIZATION  
WBFZ SELMA, AL

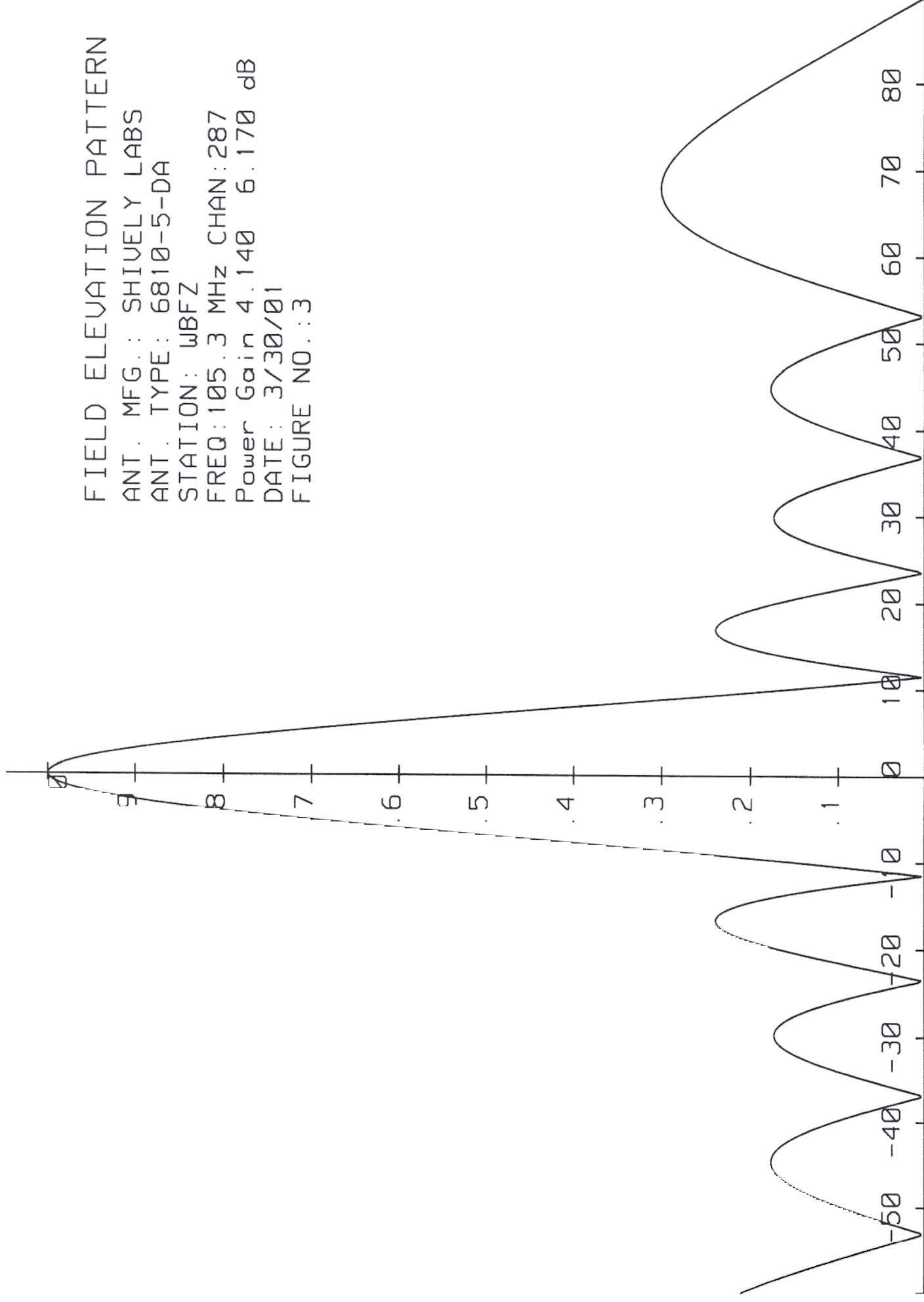
DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.550	180	0.875
10	0.610	190	0.910
20	0.685	200	0.960
30	0.765	210	0.985
40	0.850	220	0.990
45	0.885	225	0.990
50	0.910	230	0.985
60	0.950	240	0.960
70	0.965	250	0.900
80	0.950	260	0.825
90	0.920	270	0.740
100	0.890	280	0.650
110	0.855	290	0.570
120	0.815	300	0.520
130	0.790	310	0.500
135	0.780	315	0.500
140	0.780	320	0.500
150	0.775	330	0.500
160	0.795	340	0.500
170	0.830	350	0.510





SHIVELY LABS			
A DIVISION OF HOWELL LABORATORIES INC., BRIDGTON, MAINE, USA			
DRAWN BY:	SCALE:	FREQUENCY:	DATE:
RNC	N.T.S.	105.3 MHz	
APPROVED BY:			
TITLE:			
MODEL: 6810-5-DIRECTIONAL ANTENNA			
DATE:			
3/9/01			
FIGURE 2			

FIELD ELEVATION PATTERN  
ANT. MFG.: SHIVELY LABS  
ANT. TYPE: 6810-5-DA  
STATION: WBFZ  
FREQ: 105.3 MHz CHAN: 287  
Power Gain 4.140 6.170 dB  
DATE: 3/30/01  
FIGURE NO.: 3



S.O. 21,714

## VALIDATION OF GAIN CALCULATION

WBFZ SELMA, AL

MODEL 6810-5-DA

Elevation Gain of 6810-5-DA equals 2.70

The RMS values are calculated utilizing the data of a planimeter.

Horizontal RMS divided by Vertical RMS equals

$$0.820 \div 0.795 = 1.031$$

Elevation Gain of Horizontal Component equals

$$2.70 \times 1.031 = 2.784$$

Elevation Gain of Vertical Component equals

$$2.70 \times 0.970 = 2.619$$

Horizontal Azimuth Gain equals  $1/(\text{RMS})^2$

$$1/(0.820)^2 = 1.487$$

Vertical Azimuth Gain equals  $1/(\text{RMS} \div \text{Max Vert})^2$

$$1/(0.795 \div 0.990)^2 = 1.551$$

\* Total Horizontal Gain is Elevation Gain times Azimuth Gain

$$2.784 \times 1.487 = 4.140$$

\* Total Vertical Gain is Elevation Gain times Azimuth Gain

$$2.619 \times 1.551 = 4.062$$

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ERP divided by Horizontal Gain equals Antenna Input Power

$$50.0 \text{ kW} \div 4.140 = 12.0773$$

Antenna Input Power times Vertical Gain equals Vertical ERP

$$12.0773 \times 4.062 = 49.06$$

Maximum Value of the Vertical Component squared times the Maximum ERP equals the Vertical ERP

$$(0.990)^2 \times 50.0 \text{ kW} = 49.01$$

NOTE: Calculating the ERP of the Vertical Component by two methods validates the total antenna gain calculations

# England Survey & Mapping

811 Phil Harper Drive  
Demopolis, Alabama 36732  
Phone # 334-289-1435  
(Email) England@westal.net

June 13, 2001

Charles Jones, Jr.  
Imani Communications  
P. O. Box 1305  
Selma, Alabama 36702

RE: FCC Permit File No. BPH-960429MF  
Direction of Antenna Array for WBFZ-FM

Dear Sir:

On Wednesday, June 13, 2001, I surveyed the completed installation of the antenna array for station WBFZ-FM located at latitude 32° 16' 17" North and longitude 87° 15' 29" West. On this day I found the true azimuth of the antenna array to be 144°.

Thanks, for your business and time.

Sincerely,



Charles D. England  
Professional Land Surveyor  
Alabama PLS # 15,922



**EXHIBIT #A3**  
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# AFFIDAVIT

June 12, 2001

Federal Communications Commission  
Audio Services Division

**RE: WBFZ - FM Permit Number BPH - 960429MF**

To Whom It may concern

In Compliance with Special Operating Conditions number 3 of permit number BPH - 960429MF, I hereby submit the following.

The Antenna, a Shively 6810-5DA was installed according to the manufacture's instructions as outlined in the attached blueprints.

My Qualifications are: Chief Engineer License Number PG-6-11812

I, Jeffery A. Baxter hereby state the above to be true and correct this 12<sup>th</sup> day of June 12, 2001

  
Jeffery A. Baxter  
Baxter Broadcast Services

**EXHIBIT #A4**  
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