TECHNICAL EXHIBIT
APPLICATION FOR LICENSE
RADIO STATION KKDU(FM)
EL DORADO, ARKANSAS
CH 205C2 26 KW (MAX-DA) 115 M

Technical Statement

This Technical Exhibit, of which this statement is part, was prepared on behalf of radio station KKDU(FM) on Channel 205C2 at El Dorado, Arkansas. KKDU(FM) has authorization to construct a new FM radio station on Channel 205C2 assigned to El Dorado, Arkansas.[1] The maximum effective radiated power is 26 kilowatts (kW) with an antenna height above average terrain of 115 meters. By this instant application, program test authority and station licensure is requested. Figure 1 is a tabulation of the RF system specifications.

Special Conditions

As requested by the Commission, a complete proof-of-performance for the directional antenna is provided herein as Appendix A. The licensed surveyor affidavit establishing the orientation of the directional antenna is provided in Appendix B. Preston Bridges, the engineering

[1] See FCC Construction Permit BMPED-20030721ACA.

supervisor during the KKDU(FM) construction, provides his affidavit and certification in Appendix C.

Charles A. Cooper

November 25, 2003

du Treil, Lundin & Rackley, Inc.
240 North Washington Blvd., Suite 700
Sarasota, Florida 34236
(941) 366-2611

Figure 1

TECHNICAL EXHIBIT
APPLICATION FOR LICENSE
RADIO STATION KKDU(FM)
EL DORADO, ARKANSAS
CH 205C2 26 KW (MAX-DA) 115 M

KKDU(FM) RF Transmission System Specifications

Description	System
Transmitter Power Output (5.9 kW):	7.7 dBk
Transmission Line Loss (1-5/8″) 235 feet:	0.5 dB
Shively 6810-D-DA Gain (4.866 Power Gain):	6.9 dB
Maximum Effective Radiated Power (26 kW):	14.1 dBk

APPENDIX A

ANTENNA PROOF-OF-PERFORMANCE

Shively Labs
a division of Howell Laboratories,Inc.

P. O. Box 389 Harrison Rd.,
Bridgton, Maine 04009 USA

- An Employee-Owned Company -

(207) 647-3327
888-SHIVELY
Fax: (207) 647-8273
E-mail: sales@shively.com
Web site: www.shively.com

S.O. 23093

Report of Test 6810-5-DA

for

BROADCASTING FOR THE CHALLENGED, INC.

KKDU 88.9 MHz EL DORADO, AR

OBJECTIVE:

The objective of this test was to demonstrate the directional characteristics of a 6810-5-DA to meet the needs of KKDU and to comply with the requirements of the FCC construction permit, file number BMPED-20030721ACA.

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 BMPED-200307
21ACA indicates that the Horizontal radiation component shall not exceed 26 kW at any azimuth and is restricted to the following values at the azimuths specified:

170 to 180 Degrees T: 8.7 kW

From Figure 1, the maximum radiation of the Horizontal component occurs at 23 Degrees T to 55 Degrees T and at 125 Degrees T to 133 Degrees T. At the restricted azimuth of 170 to 180 Degrees T the Horizontal component is 5.114 dB down from the maximum of 26 kW, or 8.0 kW.

The R.M.S. of the Horizontal component is 0.760. The total Horizontal power gain is 4.866. The R.M.S. of the Vertical component is 0.730. The total Vertical power gain is 4.772. See Figure 4 for calculations. The R.M.S. of the FCC composite pattern is 0.880. 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 the tapered tower at the KKDU site. A pattern was measured for every position of the antenna on the tapered tower to insure that no pattern exceeded the composite pattern. The patterns were averaged to produce one pattern (Figure 1). The spacing of the antenna to the tower was varied to achieve the vertical pattern shown in Figure 1. A horizontal parasitic element was placed directly under the bay. The position of this horizontal parasitic element was changed until the horizontal pattern shown in Figure 1 was achieved. See Figure 2 for mechanical details.

METHOD OF MEASUREMENT:

As allowed by the construction permit, file number BMPED-20030721ACA, 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:

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 design and development of broadcast antennas, filter systems and RF transmission components since 1974, as an RF Engineer for six years with the original Shively Labs in Raymond, ME and for a short period of time with Dielectric Communications. He is currently an Associate Member of the AFCCE and a Senior Member of IEEE. He has authored a chapter on filters and combining systems for the latest edition of the CRC Electronics Handbook and for the 9th Edition of the NAB Handbook.

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 8753 Network Analyzer

PC Based Controller

Hewlett Packard 7550A Graphics Plotter

The test equipment is calibrated to ANSI/NCSL Z540-1-1994.

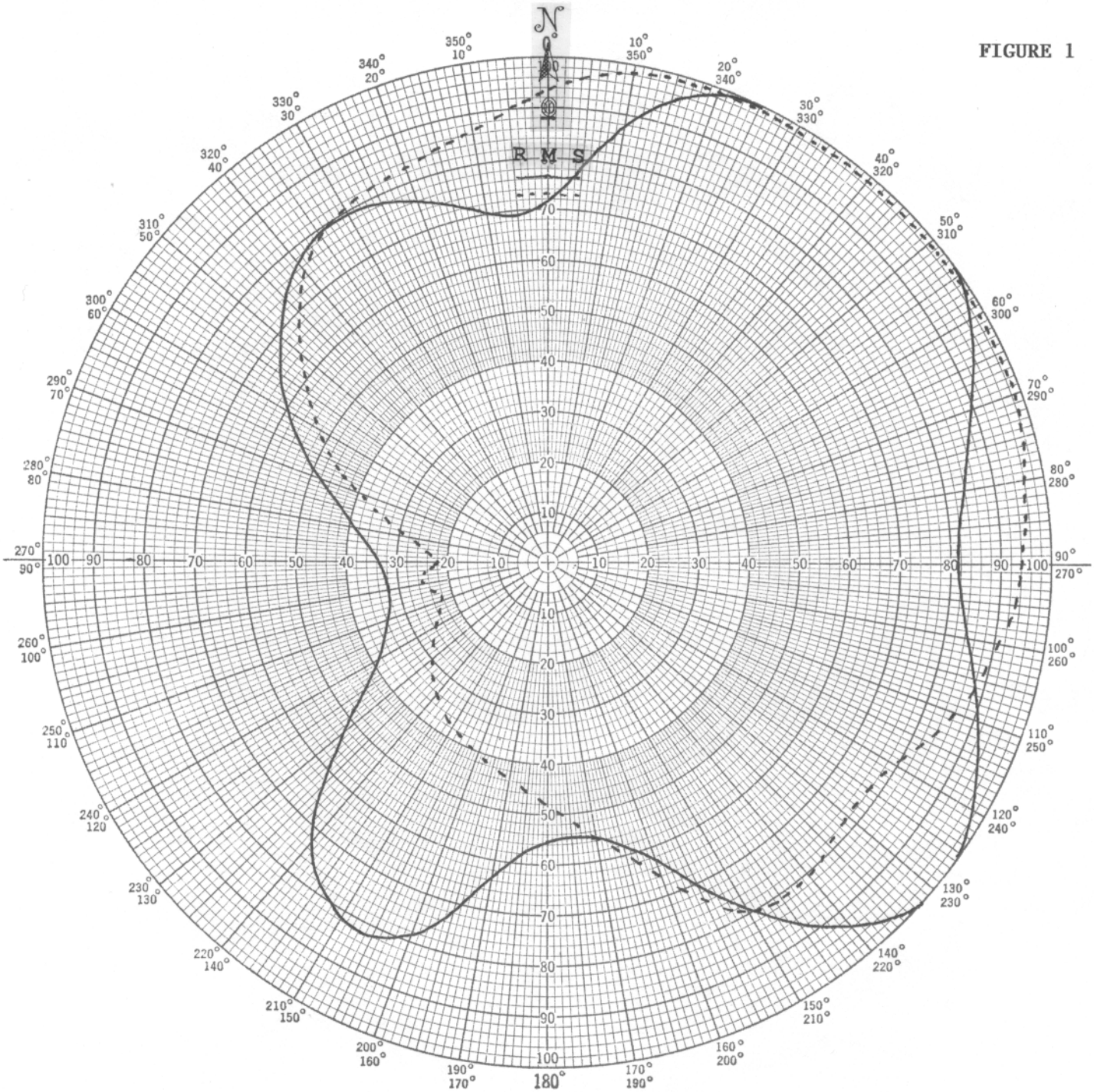
TEST PROCEDURES:

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 400.05 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 23093
October 22, 2003

FIGURE 1



Shively Labs

PROJECT NAME KKDU EL DORADO, AR

PROJECT NUMBER 23093 DATE 10/14/03

MODEL (X) FULL SCALE ( ) FREQUENCY 400.05/88.9 MHz

POLARIZATION HORIZ (——); VERT (----)

CURVE PLOTTED IN: VOLTAGE (X) POWER( ) DB( )

OBSERVER RAS

ANTENNA TYPE 6810-5-DA

PATTERN TYPE DIRECTIONAL AZIMUTH

REMARKS: SEE FIGURE 2 FOR MECHANICAL DETAILS

Figure 1A

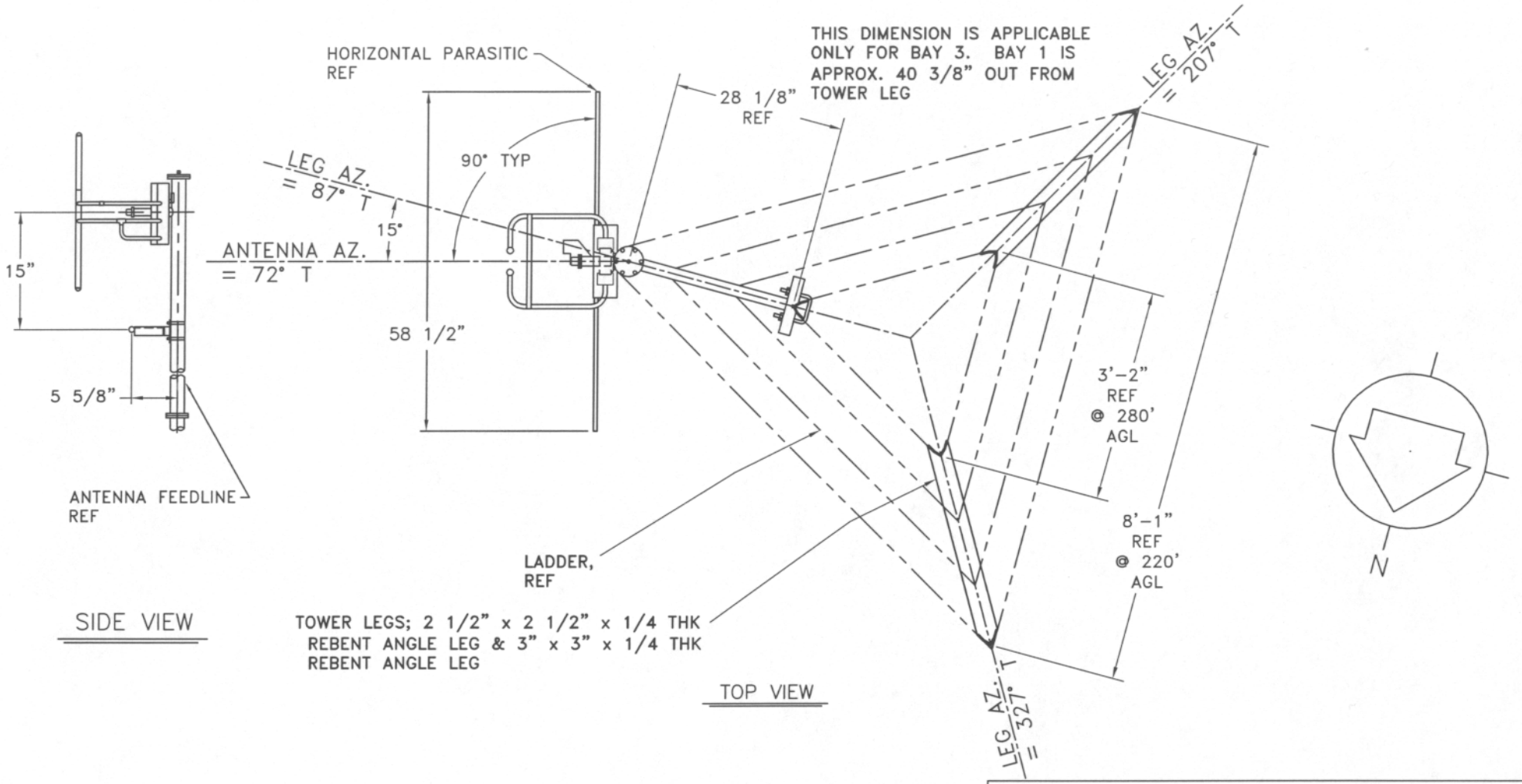
S/O 23093
TABULATION OF HORIZONTAL POLARIZATION
KKDU EL DORADO, AR

DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.715	180	0.555
10	0.880	190	0.630
20	0.985	200	0.785
30	1.000	210	0.815
40	1.000	220	0.730
45	1.000	225	0.630
50	1.000	230	0.530
60	0.970	240	0.390
70	0.895	250	0.340
80	0.840	260	0.320
90	0.815	270	0.335
100	0.845	280	0.390
110	0.910	290	0.480
120	0.975	300	0.595
130	1.000	310	0.690
135	0.985	315	0.740
140	0.940	320	0.770
150	0.790	330	0.795
160	0.625	340	0.760
170	0.555	350	0.700

Figure 1B

S/O 23093
TABULATION OF VERTICAL POLARIZATION
KKDU EL DORADO, AR

DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.935	180	0.480
10	0.980	190	0.430
20	0.990	200	0.405
30	0.990	210	0.380
40	0.990	220	0.345
45	0.990	225	0.325
50	0.990	230	0.300
60	0.990	240	0.255
70	0.985	250	0.220
80	0.960	260	0.250
90	0.940	270	0.220
100	0.905	280	0.280
110	0.860	290	0.400
120	0.795	300	0.525
130	0.780	310	0.640
135	0.785	315	0.700
140	0.805	320	0.750
150	0.795	330	0.805
160	0.660	340	0.830
170	0.555	350	0.865



SHIVELY LABS

A DIVISION OF HOWELL LABORATORIES INC., BRIDGTON, MAINE

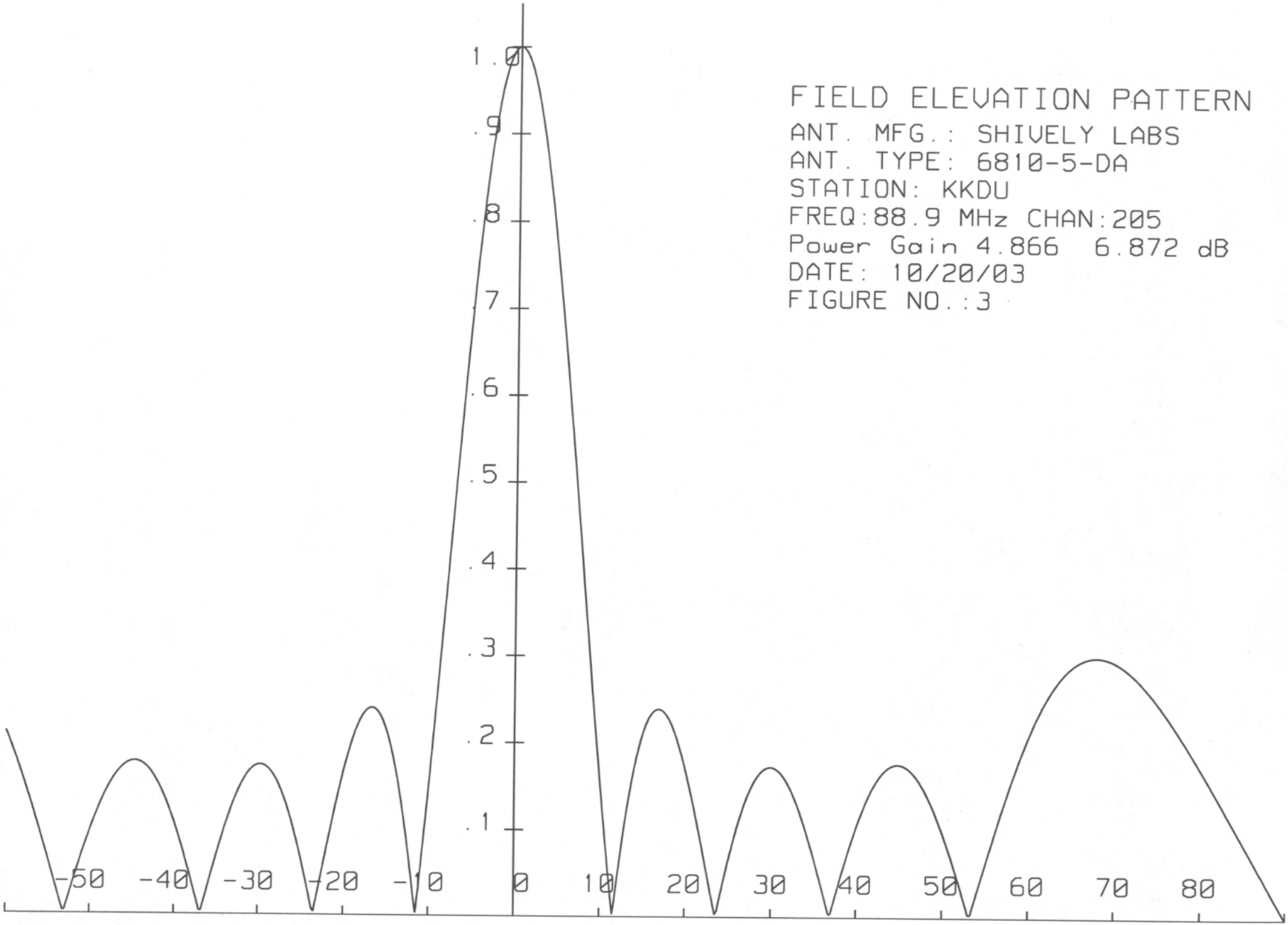
SHOP ORDER:	FREQUENCY:	SCALE:	DRAWN BY: ASP
23,093	88.9 MHz.	N.T.S.	APPROVED BY:

MODEL:

6810-5-DIRECTIONAL ANTENNA

DATE: 9/25/03

FIGURE 2



FIELD ELEVATION PATTERN
ANT. MFG.: SHIVELY LABS
ANT. TYPE: 6810-5-DA
STATION: KKDU
FREQ:88.9 MHz CHAN:205
Power Gain 4.866 6.872 dB
DATE: 10/20/03
FIGURE NO.:3

FIGURE 4

S.O. 23093

VALIDATION OF GAIN CALCULATION

KKDU EL DORADO, AR

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
$0.760 \div 0.730 = 1.041$

Elevation Gain of Horizontal Component equals
$2.70 \times 1.041 = 2.811$

Elevation Gain of Vertical Component equals
$2.70 \times 0.961 = 2.595$

Horizontal Azimuth Gain equals $1/(RMS)^2$
$1/(0.76)^2 = 1.731$

Vertical Azimuth Gain equals $1/(RMS \div Max\ Vert)^2$
$1/(0.73 \div 0.99)^2 = 1.839$

*** Total Horizontal Gain is Elevation Gain times Azimuth Gain**
$2.811 \times 1.731 = 4.866$

*** Total Vertical Gain is Elevation Gain times Azimuth Gain**
$2.595 \times 1.839 = 4.772$

ERP divided by Horizontal Gain equals Antenna Input Power
$26.0\ kW \div 4.866 = 5.343\ kW$

Antenna Input Power times Vertical Gain equals Vertical ERP
$5.343 \times 4.772 = 25.50\ kW$

Maximum Value of the Vertical Component squared times the Maximum ERP equals the Vertical ERP
$(0.99)^2 \times 26.0\ kW = 25.48\ kW$

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

APPENDIX B

LICENSED SURVEYOR AFFIDAVIT

BALL & PAULUS SURVEYORS, INC.

211 East Elm
El Dorado, Arkansas 71730
870/863-0631
Fax 870/862-6232

November 20, 2003

Preston Bridges
Construction Supervisor
Broadcasting for the Challenged
3313 Hot Springs Rd.
Benton, AR. 72015

Dear Sir:

On November 20, 2003, Ball & Paulus Surveyors, Inc. dispatched a survey crew to verify the installation of a directional antenna.

The KKDU 5 bay Shively 6810 Directional Antenna side mounted on a tower (FCC registeration #104198) on highway 82 near the West city limits of El Dorado, Arkansas, is certified to be installed at a geodetic Azimuth of 72 degrees.

Sincerely,

Samuel C. Paulus
R.L.S. #1123

APPENDIX C

ENGINEERING SUPERVISOR AFFIDAVIT

AFFIDAVIT

The KKDU El'Dorado, Arkansas 5 bay Shively 6810 Directional Antenna was installed under my supervision and has been installed as per manufacturers instructions and specifications.

Preston Bridges Preston Bridges 11-21-03

Preston Bridges
Technical Consultant
3313 Hot Springs Road
Benton, Arkansas 72015

Phone 501-316-1614

Qualifications of Preston Bridges, Technical Consultant

In 1949, entered Draughon's School of Radio Little Rock, Arkansas.
In 1950, passed the Federal Communications Commission test for First Class Radio Telephone Operators License and graduated Draughons.
Worked at several radio stations through the years as technician, chief technician, general manager and owner.
Constructed several AM Radio Stations including 2 and 4 tower directionals.
Was General Manager, Owner and Chief technician of KGKO AM and KAKI FM for 30 years.
After selling stations in 1993, worked as technical consultant building FM radio stations in Humnoke, Maumelle, Gould and Waldo, Arkansas.
Memphis and Middleton, Tennessee. Alexandria, Louisiana.
Tunica, Mississippi (Directional) Utica, Mississippi.
Sun Valley, Nevada (Directional)
Now holds Lifetime General Radio Telephone Operators License # PG8 6610.
Issued 1-2-1985.

Preston Bridges
3313 Hot Springs Road
Benton, Arkansas 72015
Date of birth 1-18-1931
Phone 501-316-1614

Preston Bridges 11-21-03

Recent additional stations constructed.
FM's at State College,Sardis and Grenada, Mississippi.
Fm's at Des Arc, Arkansas and Poplar Bluff, Missouri.
AM at Sparks, Nevada.