Shively Labs
a division of Howell Laboratories, Inc.
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P.O. Box 389 Harrison Rd.,
Bridgton, Maine 04009 USA

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

S.O. 19144

Report of Test 6810-5R-DA

for

BOCK BROADCASTING LTD. PARTNERSHIP

WXTK WEST YARMOUTH

OBJECTIVE:

The objectives of this test was to demonstrate the directional characteristics of a 6810-5R-DA to meet the needs of WXTK and to comply with the requirements of the FCC construction permit, file number BPH-960702IE .

RESULTS:

The measured azimuth pattern for the 6810-5R-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-960702IE indicates that the Horizontal radiation component shall not exceed 50.00 kW at any azimuth and is restricted to the following values at the azimuths specified:

320 Degrees T: 14.00 kW

From Figure 1, the maximum radiation of the Horizontal component occurs at 064 Degrees T to 116 Degrees T and from 205 Degrees T to 258 Degrees T. At the restricted azimuth of 320 Degrees T the Horizontal component is 6.108 dB down from the maximum of 50.00 kW, or 12.25 kW.

The R.M.S. value of the Horizontal component is 0.860, therefore the total Horizontal power gain is 3.74. The R.M.S. value of the Vertical component is 0.840, therefore the total Vertical power gain is 3.67.

METHOD OF DIRECTIONALIZATION:

The 6810-5R-DA was mounted on a pole of exact scale to a 14" OD pole. The spacing of the antenna to the pole was varied along with a pair of vertical parasitic elements were used 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 BPH-960702IE, a single level of the 6810-5R-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.

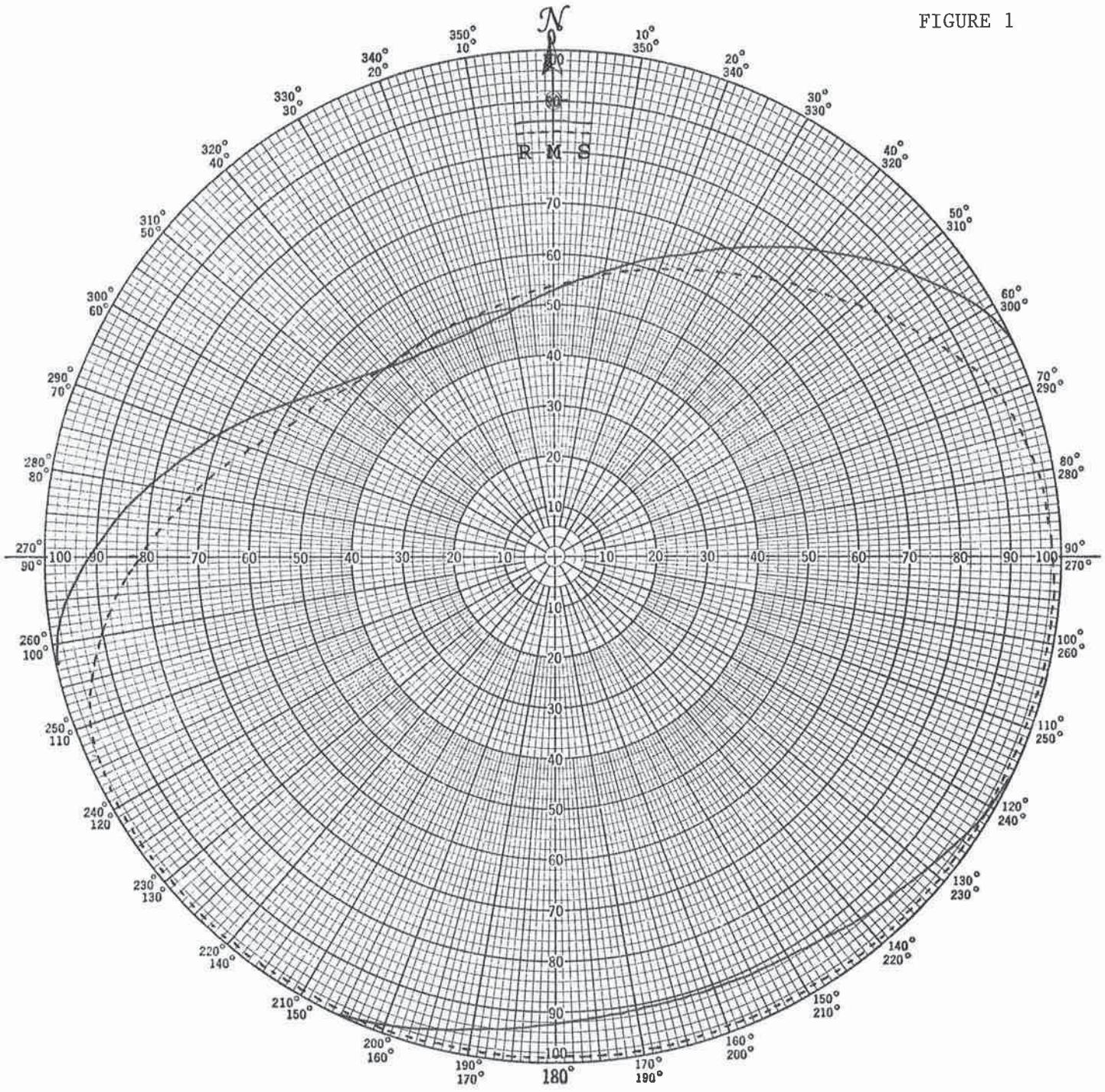
TEST PROCEDURES:

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 427.95 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 19144
August 28, 1997

FIGURE 1



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PROJECT NAME WXTK WEST YARMOUTH, MA

PROJECT NUMBER 19144 DATE 8/28/97

MODEL (X) FULL SCALE ( ) FREQUENCY 427.95/95.1 MHz

POLARIZATION HORIZ (——); VERT (----)

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

OBSERVER RAS

ANTENNA TYPE 6810-5R-DA

PATTERN TYPE DIRECTIONAL AZIMUTH

REMARKS: SEE FIGURE 2 FOR MECHANICAL DETAILS

Figure 1A

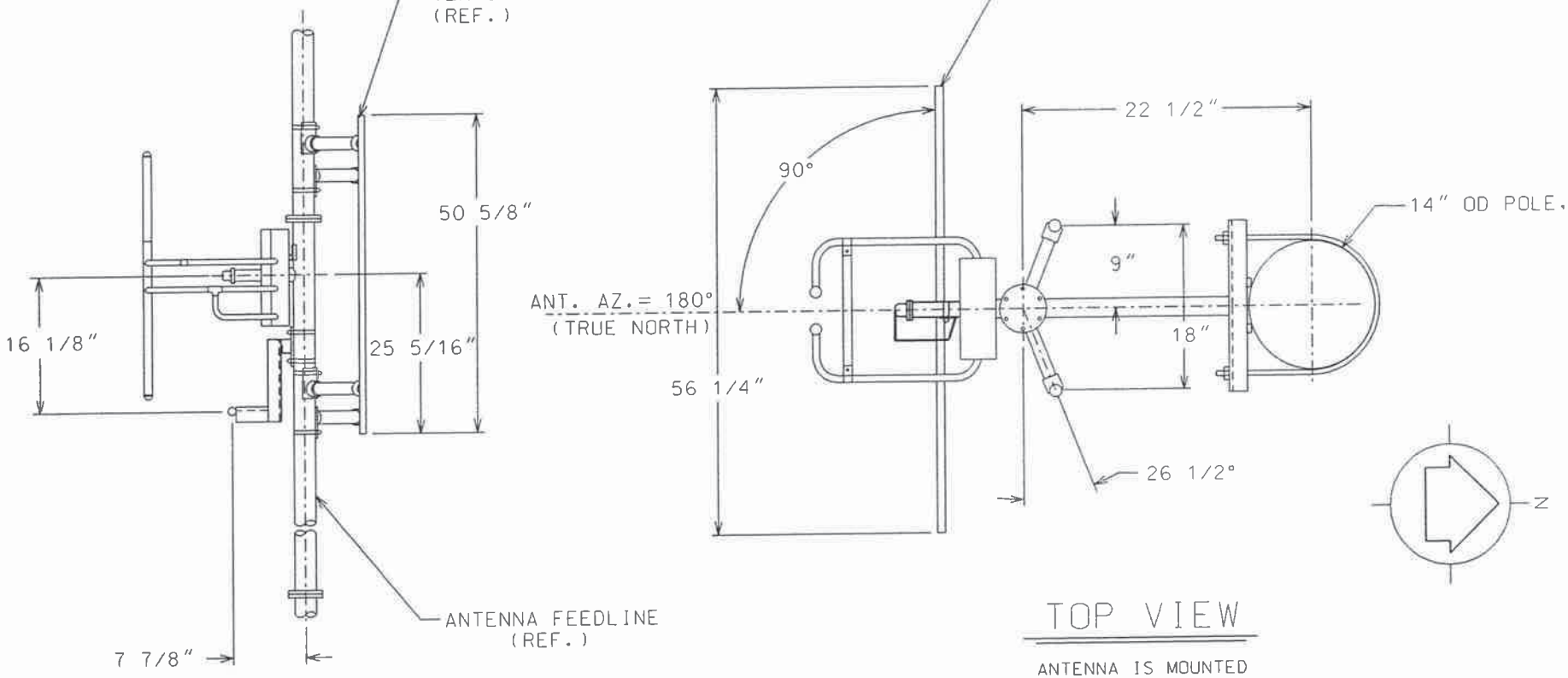
TABULATION OF HORIZONTAL POLARIZATION
WXTK WEST YARMOUTH, MA

DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.530	180	0.925
10	0.575	190	0.945
20	0.630	200	0.985
30	0.705	210	1.000
40	0.795	220	1.000
45	0.840	225	1.000
50	0.865	230	1.000
60	0.975	240	1.000
70	1.000	250	1.000
80	1.000	260	0.990
90	1.000	270	0.915
100	1.000	280	0.810
110	1.000	290	0.710
120	0.990	300	0.610
130	0.960	310	0.540
135	0.945	315	0.515
140	0.935	320	0.495
150	0.915	330	0.480
160	0.905	340	0.475
170	0.910	350	0.495

Figure 1B

TABULATION OF VERTICAL POLARIZATION
WXTK WEST YARMOUTH, MA

DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.540	180	0.990
10	0.565	190	0.990
20	0.605	200	0.990
30	0.650	210	0.990
40	0.710	220	0.990
45	0.740	225	0.990
50	0.780	230	0.990
60	0.860	240	0.990
70	0.930	250	0.970
80	0.975	260	0.905
90	0.980	270	0.810
100	0.990	280	0.720
110	0.990	290	0.635
120	0.990	300	0.610
130	0.990	310	0.540
135	0.990	315	0.510
140	0.990	320	0.495
150	0.990	330	0.500
160	0.990	340	0.500
170	0.990	350	0.515



SIDE VIEW

TOP VIEW

ANTENNA IS MOUNTED TO A 14" O.D. POLE

SHIVELY LABS

A DIVISION OF HOWELL LABORATORIES , INC., BRIDGTON, MAINE, USA

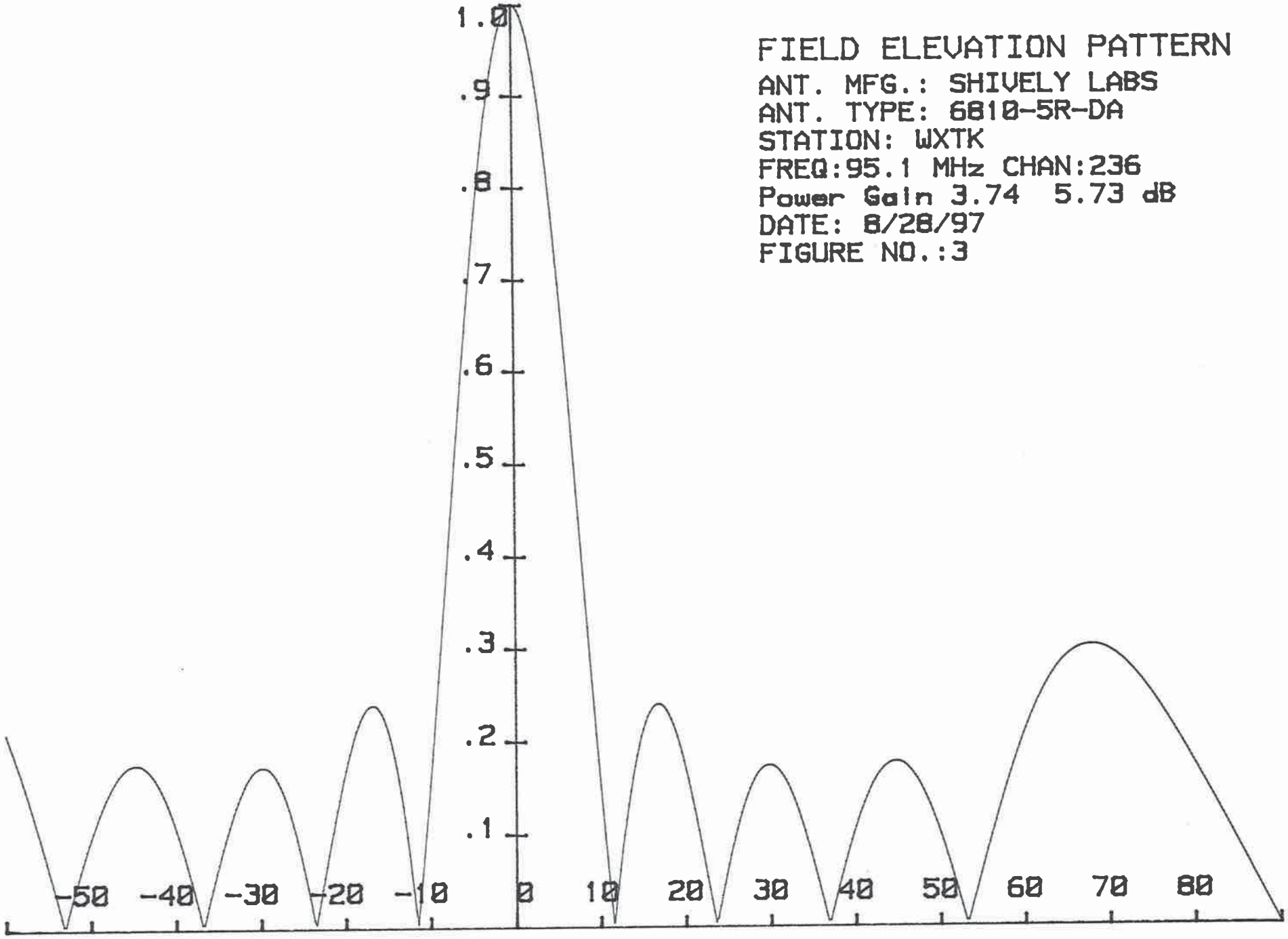
SHOP ORDER:	FREQUENCY:	SCALE:	DRAWN BY:
19,144-A W YARMOUTH, MA	95.1 MHz.	N.T.S.	EEM
			APPROVED BY: DAB

TITLE:

MODEL-6810-5R-DIRECTIONAL ANTENNA
STATION: WXTK-FM

DATE: 8-26-97

FIGURE 2



FIELD ELEVATION PATTERN
ANT. MFG.: SHIVELY LABS
ANT. TYPE: 6810-5R-DA
STATION: WXTK
FREQ:95.1 MHz CHAN:236
Power Gain 3.74 5.73 dB
DATE: 8/28/97
FIGURE NO.:3