February 1, 2001

This statement is to certify that I, Mark T. Bisbee, of 51 Averill Road, Brookline, New Hampshire observed the installation of the directional FM antenna for WYUL(FM), Chateaugay, New York and also certify that it was installed per the manufacturer's instructions.

Mark T. Bisbee

Wilhelm, Chatelle & Towne Surveyors

Fred Wilhelm, L.S. **Stephen Chatelle, L.S.** **Ronald Towne, L.S.**
P.O. Box 299, Parishville, NY, 13672 ; Phone (315) 265-2978, Fax (315) 265-3821
BOUNDARY SURVEYS - TOPOGRAPHIC AND ENGINEERING SURVEYS - SUBDIVISIONS - CARTOGRAPHY - DIGITAL MAPPING

Secretary
Federal Communications Commission
445 12th St. SW
Washington D.C. 20554

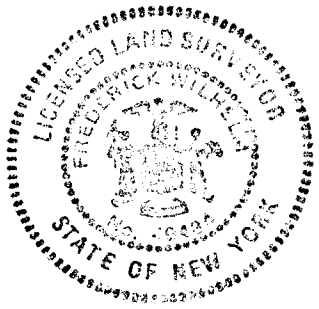
Ref. WYUL (FM), Chateaugay NY

Dear Madam Secretary,

I hereby certify that I am a Land Surveyor, Licensed by the State of New York, and that I personally inspected the installation of the WYUL (FM) directional antenna and found it to be aligned within plus or minus one (1) degree of the 130 degree True North specified by the antenna manufacturer.

Respectfully submitted;

Fred Wilhelm



Fred Wilhelm, L.S.
Licensed Surveyor

Shively Labs
a division of Howell Laboratories,Inc.
- An Employee-Owned Company -

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S.O. 21648B

Report of Test 6810-4R-SS-DA

for

CARTIER COMMUNICATIONS INC.

WYUL CHATEAUGAY, NY

OBJECTIVE:

The objective of this test was to demonstrate the directional characteristics of a 6810-4R-SS-DA to meet the needs of WYUL and to comply with the requirements of the FCC construction permit, file number BPH-19990127IB.

RESULTS:

The measured azimuth pattern for the 6810-4R-SS-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-19990127IB 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:

25-30 Degrees T: 11.5 kW

35 Degrees T: 12.5 kW

300-315 Degrees T: 1.2 kW

From Figure 1, the maximum radiation of the Horizontal component occurs at 90 Degrees T to 204 Degrees T. At the restricted azimuth of 25-30 Degrees T the Horizontal component is 7.64 dB down from the maximum of 50 kW, or 8.6 kW. At the restricted azimuth of 35 Degrees T the Horizontal component is 6.74 dB down from the maximum of 50 kW, or 10.6 kW.

At the restricted azimuth of 300-315 Degrees T, the Vertical component is 17.08 dB down from the maximum of 50 kW, or 1.0 kW.
The R.M.S. of the Horizontal component is 0.715. The total Horizontal power gain is 2.615. The R.M.S. of the Vertical component is 0.700. The total Vertical power gain is 2.564. See Figure Four for calculations. The R.M.S. of the FCC composite pattern is 0.740. Therefore this Pattern complies with the FCC requirement of 73.316(c)(2)(ix)(A).

METHOD OF DIRECTIONALIZATION:

One bay of the 6810-4R-SS-DA was mounted on a pole of exact scale to a 10 3/4" O.D. pole. The spacing of the antenna to the pole was varied and a vertical parasitic element was added 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-19990127IB, a single level of the 6810-4R-SS-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.

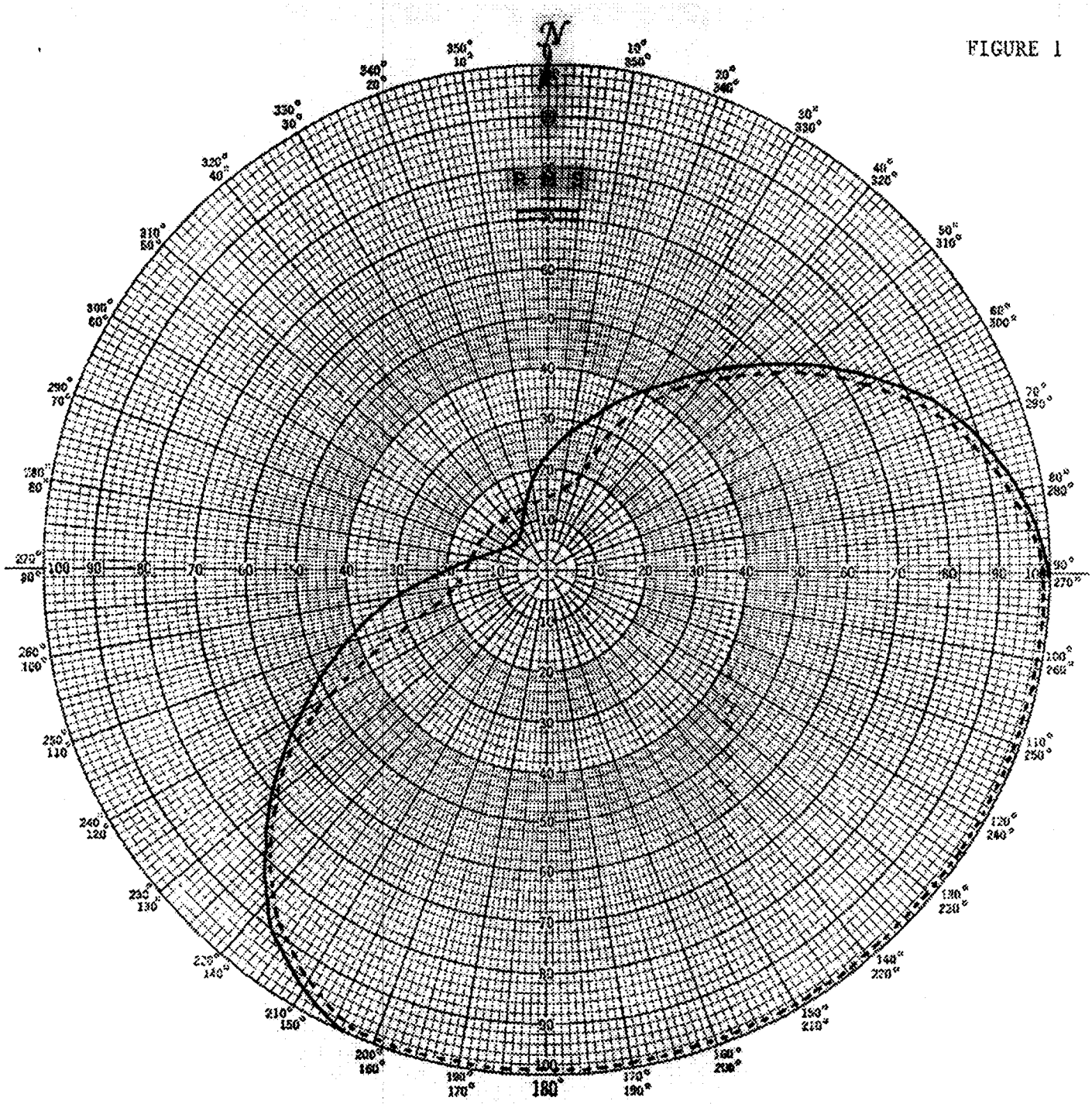
TEST PROCEDURES:

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 426.15 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 21648B
January 22, 2001

FIGURE 1



Shively Labs

PROJECT NAME WYUL CHATEAUGAY, NY

PROJECT NUMBER 21648B DATE 12/28/00

MODEL (X) FULL SCALE ( ) FREQUENCY 426.15/94.7 MHz

POLARIZATION HORIZ (——); VERT (- - - -)

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

OBSERVER RAS

ANTENNA TYPE 6810-4R-SS-DA

PATTERN TYPE DIRECTIONAL AZIMUTH

REMARKS: SEE FIGURE 2 FOR MECHANICAL DETAILS

Figure 1A

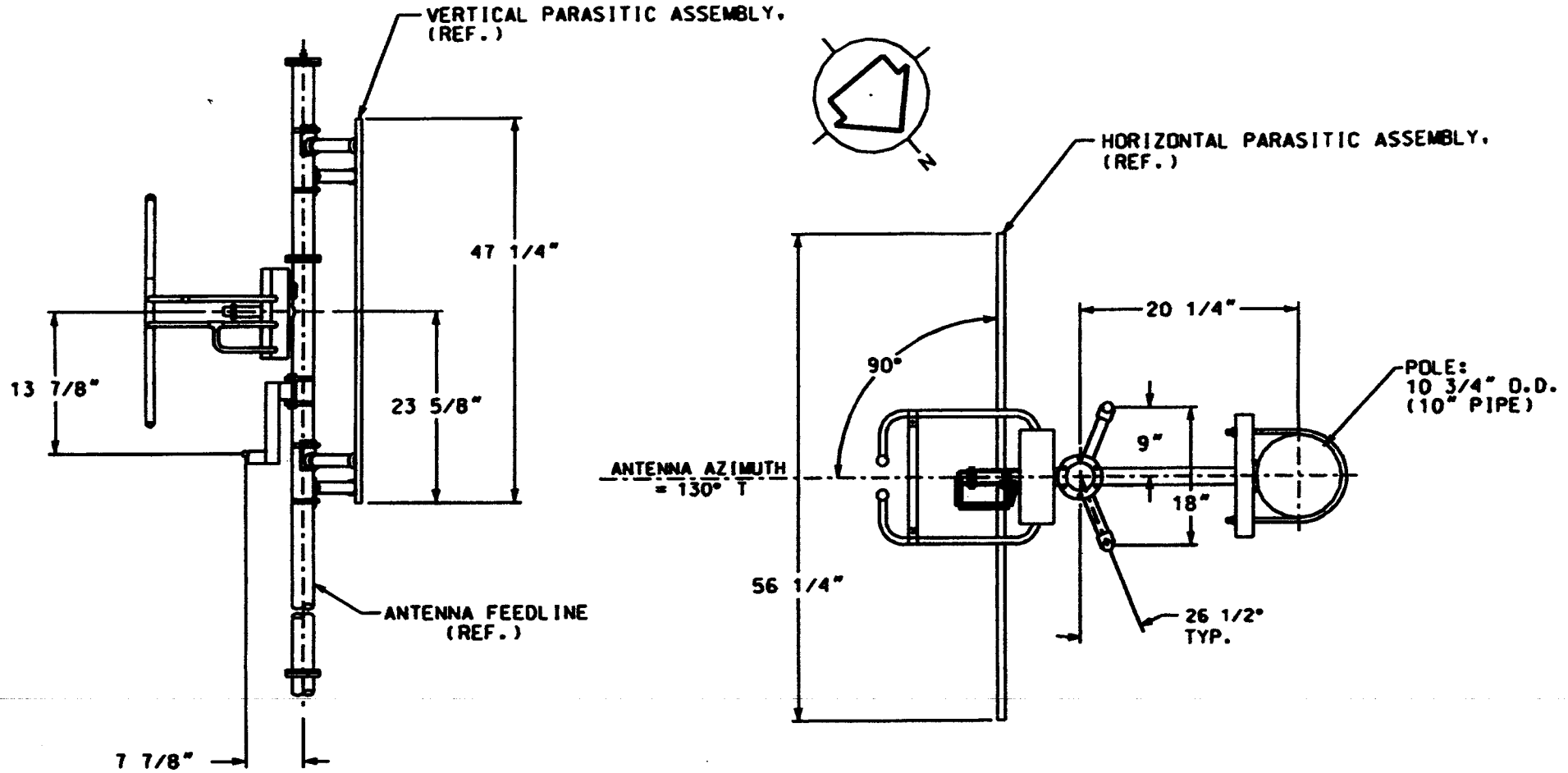
S/O 21648B
TABULATION OF HORIZONTAL POLARIZATION
WYUL CHATEAUGAY, NY

DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.230	180	1.000
10	0.280	190	1.000
20	0.340	200	1.000
30	0.415	210	0.960
40	0.520	220	0.860
45	0.575	225	0.790
50	0.640	230	0.720
60	0.765	240	0.565
70	0.875	250	0.430
80	0.950	260	0.310
90	1.000	270	0.200
100	1.000	280	0.140
110	1.000	290	0.110
120	1.000	300	0.095
130	1.000	310	0.085
135	1.000	315	0.080
140	1.000	320	0.085
150	1.000	330	0.100
160	1.000	340	0.130
170	1.000	350	0.180

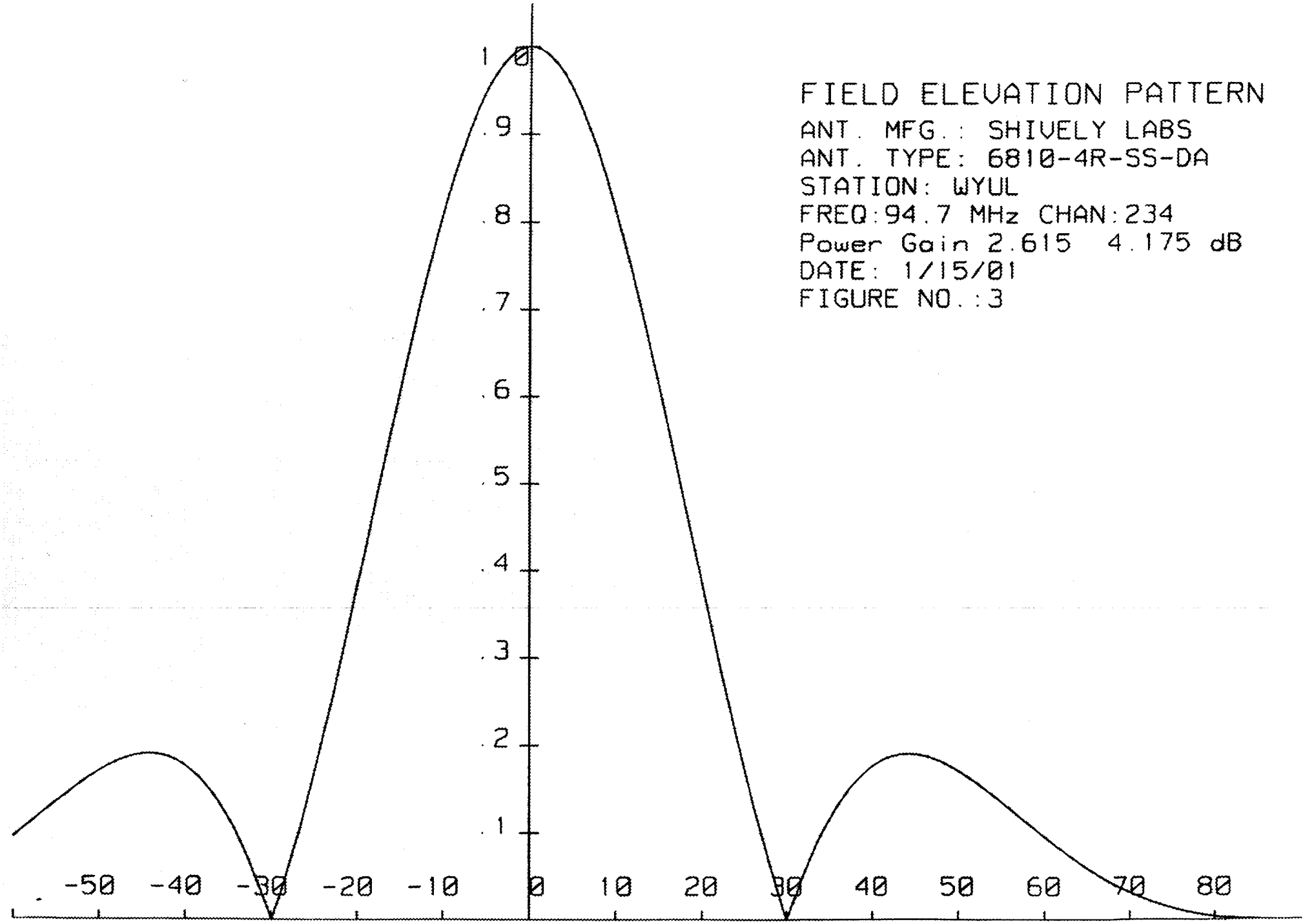
Figure 1B

S/O 21648B
TABULATION OF VERTICAL POLARIZATION
WYUL CHATEAUGAY, NY

DEGREE	RELATIVE FIELD	DEGREE	RELATIVE FIELD
0	0.145	180	0.990
10	0.160	190	0.990
20	0.200	200	0.990
30	0.370	210	0.940
40	0.495	220	0.840
45	0.550	225	0.770
50	0.610	230	0.700
60	0.735	240	0.510
70	0.860	250	0.280
80	0.935	260	0.190
90	0.985	270	0.160
100	0.990	280	0.155
110	0.990	290	0.150
120	0.990	300	0.140
130	0.990	310	0.140
135	0.990	315	0.135
140	0.990	320	0.135
150	0.990	330	0.130
160	0.990	340	0.130
170	0.990	350	0.135



SHIVELY LABS A DIVISION OF HOWELL LABORATORIES INC., BRIDGTON, MAINE			
21.648-8	94.7 MHz	N.T.S.	NMS
MODEL-6810-4R-SS-DIRECTIONAL ANTENNA			
12-6-00	**FIGURE 2**		



FIELD ELEVATION PATTERN
ANT. MFG.: SHIVELY LABS
ANT. TYPE: 6810-4R-SS-DA
STATION: WYUL
FREQ:94.7 MHz CHAN:234
Power Gain 2.615 4.175 dB
DATE: 1/15/01
FIGURE NO.:3

FIGURE 4

S.O. 21648B

VALIDATION OF GAIN CALCULATION

WYUL CHATEAUGAY, NY

MODEL 6810-4R-SS-DA

Elevation Gain of 6810-4R-SS-DA equals 1.309

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

Horizontal RMS divided by Vertical RMS equals
$0.715 \div 0.700 = 1.0214$

Elevation Gain of Horizontal Component equals
$1.309 \times 1.0214 = 1.337$

Elevation Gain of Vertical Component equals
$1.309 \times 0.979 = 1.282$

Horizontal Azimuth Gain equals $1/(\text{RMS})^2$
$1/(0.715)^2 = 1.956$

Vertical Azimuth Gain equals $1/(\text{RMS} \div \text{Max Vert})^2$
$1/(0.700 \div 0.990)^2 = 2.000$

*** Total Horizontal Gain is Elevation Gain times Azimuth Gain**
$1.337 \times 1.956 = 2.615$

*** Total Vertical Gain is Elevation Gain times Azimuth Gain**
$1.282 \times 2.000 = 2.564$

ERP divided by Horizontal Gain equals Antenna Input Power
$50.0 \text{ kW} \div 2.615 = 19.12$

Antenna Input Power times Vertical Gain equals Vertical ERP
$19.12 \times 2.564 = 49.02$

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