



PATTERN CERTIFICATION

TABLE OF CONTENTS

Narrative Pattern Certification

FM Azimuth Pattern Approval

Azimuth Patterns of Horizontal and Vertically Polarized Planes

Tabulation of Measured Horizontal and Vertically Polarized Planes

Composite Pattern of Horizontal and Vertically Polarized Planes

Tabulation of Composite Pattern

Gain Summary

Rectangular Plot of Vertical Plane Pattern

Sketch of Scale Model Test

PATTERN CERTIFICATION

Method of Measurement

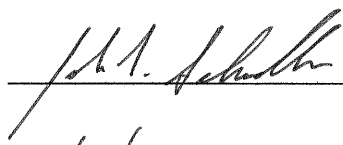
The azimuth pattern for "WVPN", Dielectric Document Sketch # 29a, was measured in the following manner.

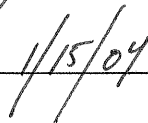
A single 4.4 to 1 scale model "DCRC" bay radiator was mounted on a similarly scaled model of the tower according to information provided to Dielectric by the customer; refer to Dielectric Document Sketch # 29a. The antenna under test, all parasitics, all known tower appurtenances, and the tower section were rotated through 360 degrees while receiving a signal at the appropriate frequency from a linear cavity-backed source antenna. Both the horizontal and vertical polarization azimuth patterns were measured in an anechoic test range.

The transmit and scale model antennas are mounted at identical elevations and at opposite ends of the chamber. A Hewlett Packard model 8752C- network analyzer was used to supply the RF signal the source antenna at 4.4 times the fundamental FM frequency and to receive the signal intercepted by the antenna under test. The received signal was converted to a relative level, referenced to the source. This level was stored on a computer acting as the master controller. The computer controls the measurement system via IEEE-488 control bus through a GPIB card.

Statement of Qualifications

John Schadler is the Director of Antenna Design and Development here at Dielectric. He has been working for Dielectric since 1986. He received a BS in Electrical Engineering from Penn State University, and a Masters in Electrical Engineering from Drexel University. He has multiple patents in the areas of circular polarization, centerfed antennas, broadband and multi-channel antennas, common aperture antennas, and DTV antennas.

Signed by: 

Date: 



MSO NO: 77129

DATE: January 15, 2004

PATTERN NO: WVPN – 29a

FM AZIMUTH PATTERN APPROVAL

The azimuth pattern of the horizontal polarization and vertical polarization as supplied by Dielectric in the document labeled “ WVPN - 29a ”, is acknowledged as acceptable. We understand that Dielectric does not guarantee or predict signal strength in any particular location.

WEST VIRGINIA PUBLIC BROADCASTING
(Customer's name)

By: DAVE McELWANE
(Name typed or printed)

Title: ENGINEERING MANAGER

Dave McElwane
(Signature)

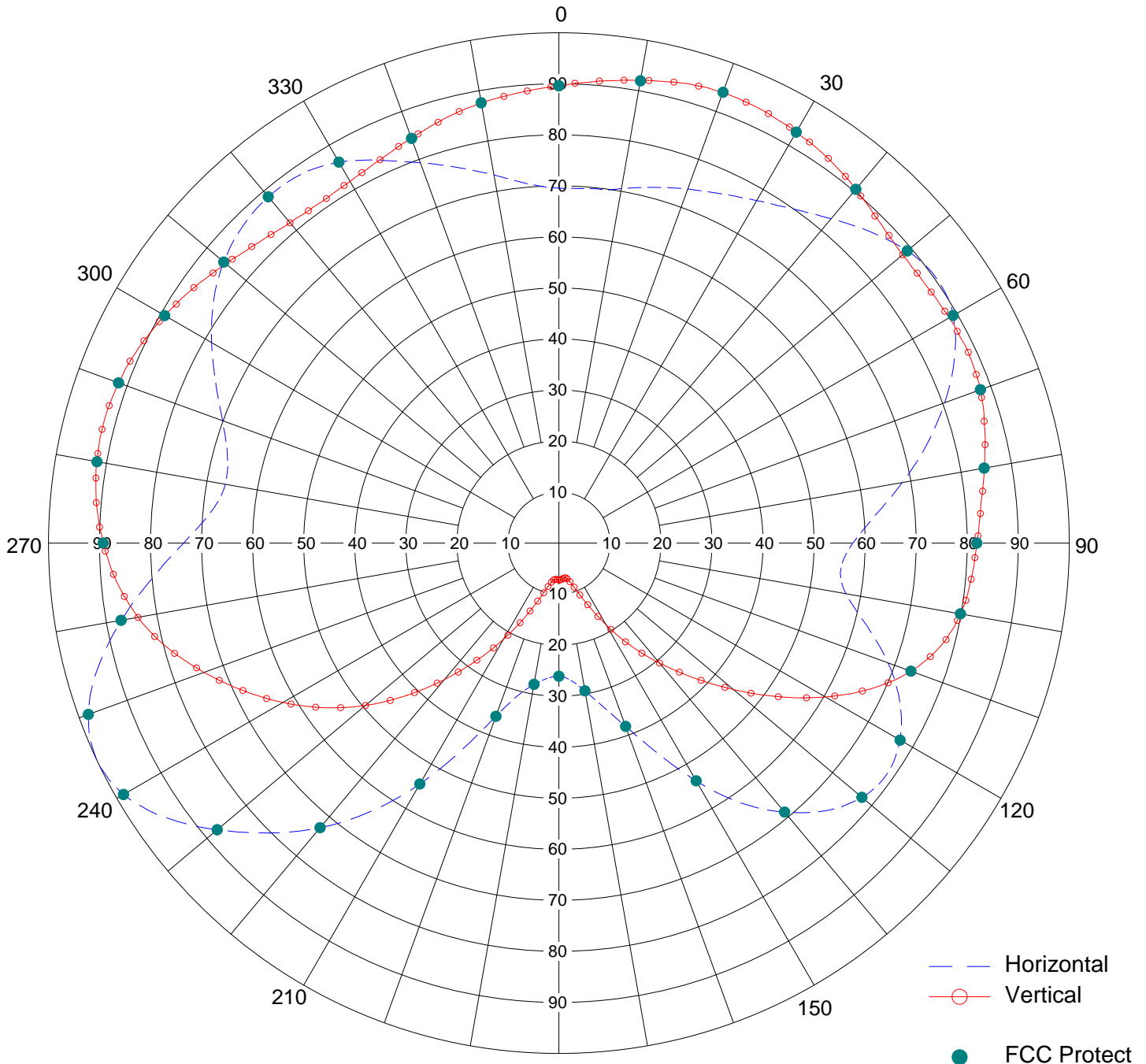
Proposal Number **77129**
Date **Jun 19, 2006**
Call Letters **WVPN**
Location **Charleston, WV**
Customer **W.Virginia Public Radio**
Antenna Type **DCRC6CD**

AZIMUTH PATTERN

98.5% Ccov - 50.1% Hrms - 49.9% Vrms

Gain **1.9 (2.79) HPOL 1.7 (2.3) VPOL**
Calculated / Measured **Measured**

Frequency **88.5 MHz**
Drawing # **29a**



Remarks: pattern # 29 rotated 8° CW to match new tower survey



Proposal Number **77129**
 Date **20-Jun-06**
 Call Letters **WVPN**
 Location **Charleston, WV**
 Customer **W.Virginia Public Radio**
 Antenna Type **DCRC6CD**
 Frequency **88.50 MHz**
 Drawing #: **29a**

TABULATION OF HORIZONTAL AZIMUTH PATTERN

Angle	Field	dBk	ERP kW
0	0.696	13.287	21.314
10	0.705	13.398	21.869
20	0.739	13.807	24.029
30	0.775	14.221	26.428
40	0.830	14.816	30.312
50	0.891	15.432	34.931
60	0.892	15.442	35.009
70	0.804	14.540	28.442
80	0.683	13.123	20.526
90	0.576	11.643	14.598
100	0.571	11.567	14.346
110	0.686	13.161	20.706
120	0.772	14.187	26.223
130	0.775	14.221	26.428
140	0.688	13.186	20.827
150	0.538	11.050	12.736
160	0.382	8.076	6.421
170	0.294	5.801	3.803
180	0.261	4.767	2.997
190	0.281	5.409	3.474
200	0.361	7.585	5.734
210	0.545	11.162	13.069
220	0.728	13.677	23.319
230	0.874	15.265	33.611
240	0.985	16.303	42.690
250	0.981	16.268	42.344
260	0.871	15.235	33.380
270	0.735	13.760	23.770
280	0.664	12.878	19.399
290	0.701	13.349	21.622
300	0.786	14.343	27.183
310	0.857	15.094	32.316
320	0.886	15.383	34.540
330	0.862	15.145	32.694
340	0.793	14.420	27.669
350	0.733	13.737	23.641



Proposal Number **77129**
 Date **20-Jun-06**
 Call Letters **WVPN**
 Location **Charleston, WV**
 Customer **W.Virginia Public Radio**
 Antenna Type **DCRC6CD**
 Frequency **88.50 MHz**
 Drawing #: **29a**

TABULATION OF VERTICAL AZIMUTH PATTERN

Angle	Field	dBk	ERP kW
0	0.896	15.481	35.324
10	0.920	15.710	37.242
20	0.940	15.897	38.878
30	0.930	15.804	38.056
40	0.905	15.567	36.037
50	0.879	15.314	33.996
60	0.883	15.354	34.306
70	0.879	15.314	33.996
80	0.846	14.982	31.492
90	0.819	14.700	29.513
100	0.799	14.485	28.090
110	0.734	13.748	23.705
120	0.603	12.041	15.999
130	0.446	9.421	8.752
140	0.307	6.177	4.147
150	0.185	1.778	1.506
160	0.097	-3.830	0.414
170	0.069	-6.788	0.209
180	0.072	-6.419	0.228
190	0.076	-5.949	0.254
200	0.121	-1.910	0.644
210	0.218	3.204	2.091
220	0.349	7.291	5.359
230	0.495	10.327	10.781
240	0.624	12.338	17.133
250	0.740	13.819	24.094
260	0.837	14.889	30.825
270	0.893	15.452	35.088
280	0.919	15.701	37.161
290	0.918	15.691	37.080
300	0.892	15.442	35.009
310	0.852	15.043	31.940
320	0.819	14.700	29.513
330	0.818	14.690	29.441
340	0.844	14.961	31.343
350	0.876	15.285	33.765



Proposal Number	77129	Revision:	1
Date	Jun 20, 2006		
Call Letters	WVPN		
Location	Charleston, WV		
Customer	W.Virginia Public Radio		
Antenna Type	DCRC6CD		

COMPOSITE AZIMUTH PATTERN

Calculated / Measured

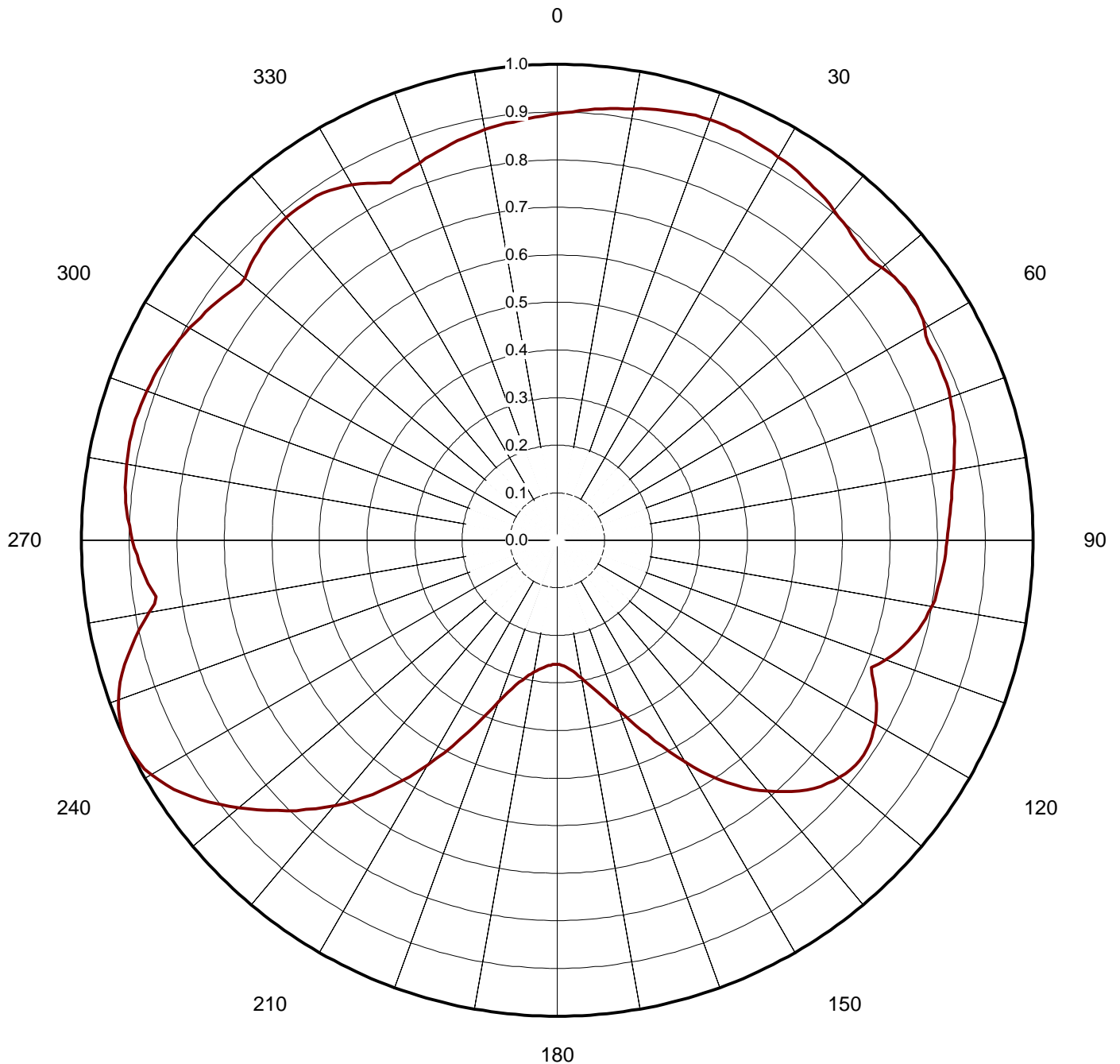
Measured

Frequency

88.50 MHz

Drawing #

29a





Proposal Number	77129
Date	20-Jun-06
Call Letters	WVPN
Location	Charleston, WV
Customer	W.Virginia Public Radio
Antenna Type	DCRC6CD
Frequency	88.50 MHz
Drawing #:	29a

TABULATION OF COMPOSITE AZIMUTH PATTERN

Angle	Field	dBk	Power kW	Input Power
0	0.896	15.481	35.324	44.000
10	0.920	15.710	37.242	44.000
20	0.940	15.897	38.878	44.000
30	0.930	15.804	38.056	44.000
40	0.905	15.567	36.037	44.000
50	0.891	15.432	34.931	44.000
60	0.892	15.442	35.009	44.000
70	0.879	15.314	33.996	44.000
80	0.846	14.982	31.492	44.000
90	0.819	14.700	29.513	44.000
100	0.799	14.485	28.090	44.000
110	0.734	13.748	23.705	44.000
120	0.772	14.187	26.223	44.000
130	0.775	14.221	26.428	44.000
140	0.688	13.186	20.827	44.000
150	0.538	11.050	12.736	44.000
160	0.382	8.076	6.421	44.000
170	0.294	5.801	3.803	44.000
180	0.261	4.767	2.997	44.000
190	0.281	5.409	3.474	44.000
200	0.361	7.585	5.734	44.000
210	0.545	11.162	13.069	44.000
220	0.728	13.677	23.319	44.000
230	0.874	15.265	33.611	44.000
240	0.985	16.303	42.690	44.000
250	0.981	16.268	42.344	44.000
260	0.871	15.235	33.380	44.000
270	0.893	15.452	35.088	44.000
280	0.919	15.701	37.161	44.000
290	0.918	15.691	37.080	44.000
300	0.892	15.442	35.009	44.000
310	0.857	15.094	32.316	44.000
320	0.886	15.383	34.540	44.000
330	0.862	15.145	32.694	44.000
340	0.844	14.961	31.343	44.000
350	0.876	15.285	33.765	44.000



Proposal Number	77129
Date	Jan 15, 2004
Call Letters	WVPN
Location	Charleston, WV
Customer	W.Virginia Public Radio
Antenna Type	DCRC6CD
Frequency	88.50 MHz
Drawing #	29a

CUSTOMER GAIN SUMMARY

Azimuth Pattern Gain of Horizontal Polarization	1.90
Elevation Pattern Gain Per Polarization	3.20
Peak Gain at Horizontal Polarization	6.08

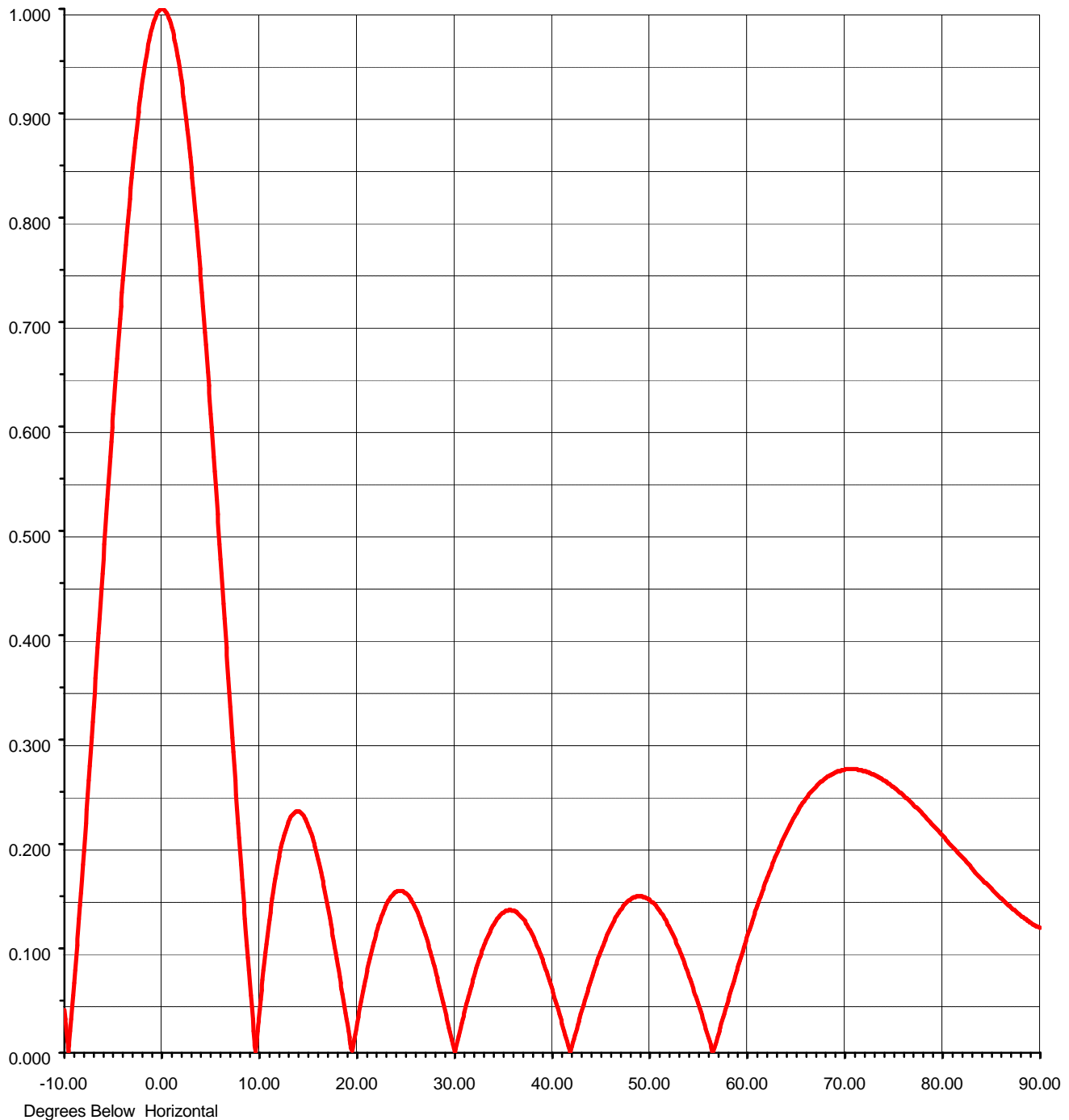


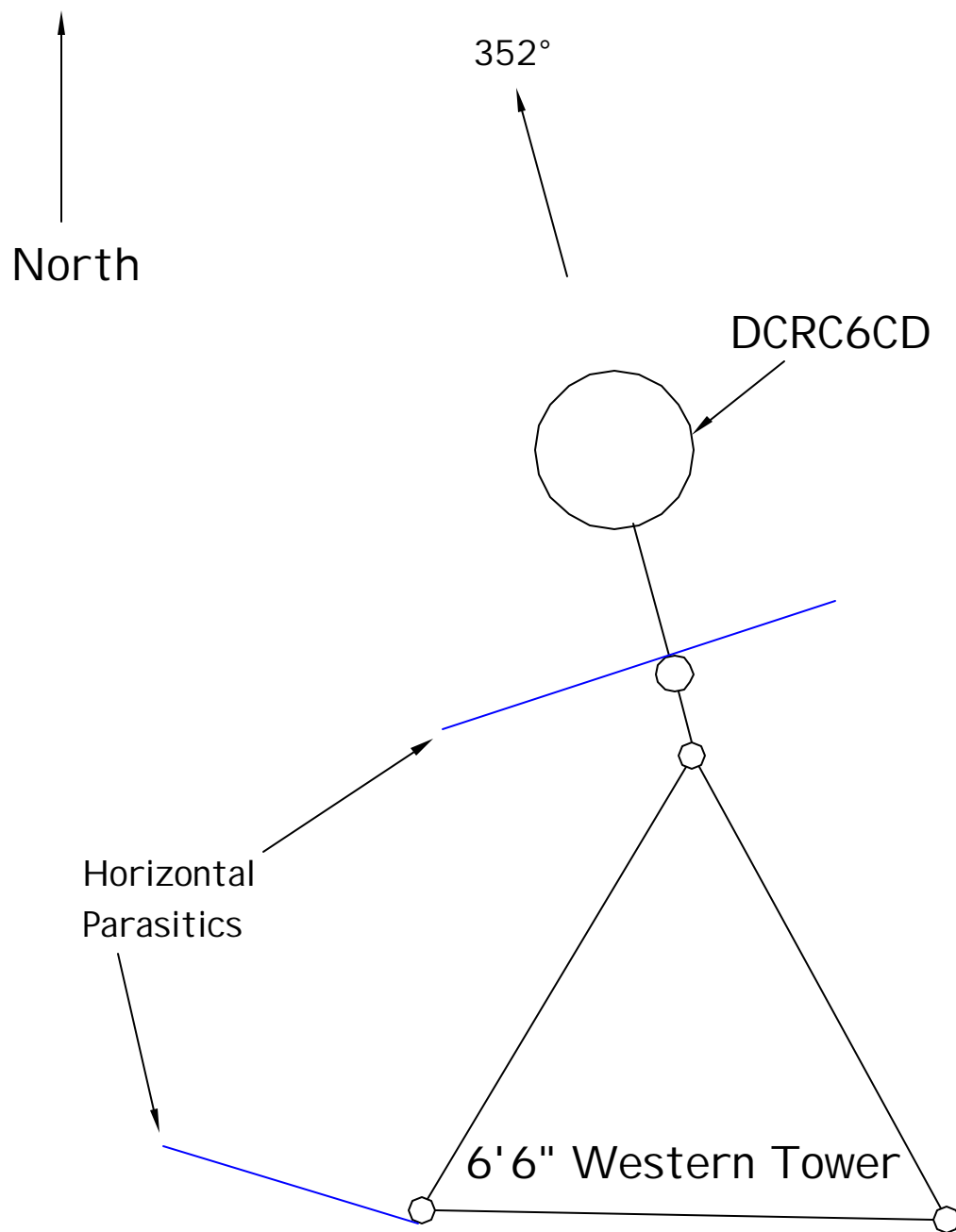
Proposal Number **77129**
Date **15-Jan-04**
Call Letters **WVPN**
Location **Charleston, WV**
Customer **W.Virginia Public Radio**
Antenna Type **DCRC6CD**

ELEVATION PATTERN

RMS Gain at Main Lobe **3.20**
Per Polarization
Calculated / Measured **Calculated**

Beam Tilt **0.00 deg**
Frequency **88.50 MHz**
Drawing # **29a**





WVPN - 88.5

Document Sketch # 29a

Leg Azimuths @ 9°, 129°, 249°

Dielectric