



Date	1/27/2016
Call Letters	W254AY
Location	Auburn, AL
Customer	Auburn Network
Antenna Type	DCRH
Frequency	98.7
Drawing #	28

## **PATTERN CERTIFICATION**

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## **PATTERN CERTIFICATION**

### **Method of Measurement**

The azimuth pattern for W254AY, Dielectric Document Sketch #28, was measured in the following manner.

A single 4.4 to 1 scale model "DCRH" 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 #28. 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 8753ET network analyzer was used to supply the RF signal to 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**

Nicole Starrett is an Electrical Engineer here at Dielectric. She received a BS in Electrical Engineering from the University of Maine in 2014. She has 2 year(s) experience in RF antenna engineering and has been employed by Dielectric since 2014.

Signed by: \_\_\_\_\_

Date: \_\_\_\_\_



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## FM AZIMUTH PATTERN APPROVAL

The azimuth pattern of the horizontal polarization and vertical polarization as supplied by Dielectric in the document labeled "Pattern 28", is acknowledged as acceptable.

We understand that Dielectric does not guarantee or predict signal strength in any particular location.

\_\_\_\_\_  
(Customer's name)

By:

\_\_\_\_\_  
(Name typed or printed)

Title:

\_\_\_\_\_

\_\_\_\_\_  
(Signature)



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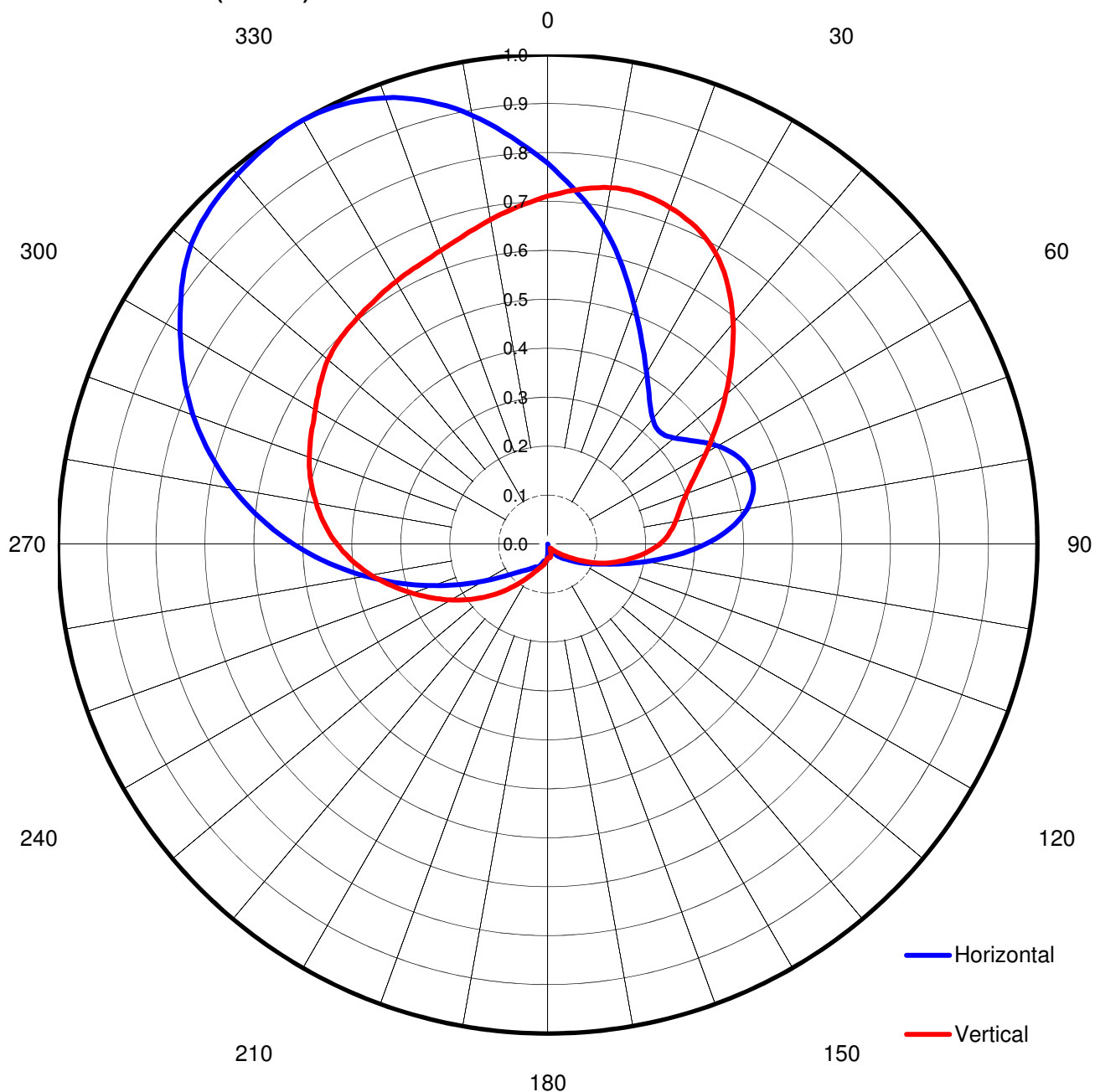
## AZIMUTH PATTERN

54.84% Hrms 45.16% Vrms

Gain **3.88 (5.89 dB) HPOL**  
**3.15 (4.98 dB) VPOL**

Calculated / Measured

**Measured**





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## TABULATION OF HORIZONTAL AZIMUTH PATTERN

Angle	Field	dBk	ERP kW
	0.778	-8.201	0.151
10	0.658	-9.656	0.108
20	0.517	-11.751	0.067
30	0.404	-13.893	0.041
40	0.334	-15.546	0.028
50	0.337	-15.468	0.028
60	0.401	-13.958	0.040
70	0.438	-13.191	0.048
80	0.414	-13.681	0.043
90	0.322	-15.863	0.026
100	0.205	-19.786	0.011
110	0.120	-24.437	0.004
120	0.076	-28.404	0.001
130	0.048	-32.396	0.001
140	0.032	-35.918	0.000
150	0.016	-41.938	0.000
160	0.012	-44.437	0.000
170	0.009	-46.936	0.000
180	0.020	-40.000	0.000
190	0.035	-35.139	0.000
200	0.048	-32.396	0.001
210	0.055	-31.213	0.001
220	0.070	-29.119	0.001
230	0.095	-26.466	0.002
240	0.152	-22.384	0.006
250	0.248	-18.132	0.015
260	0.378	-14.471	0.036
270	0.519	-11.717	0.067
280	0.653	-9.722	0.107
290	0.771	-8.280	0.149
300	0.867	-7.260	0.188
310	0.951	-6.457	0.226
320	0.986	-6.143	0.243
330	1.000	-6.021	0.250
340	0.970	-6.285	0.235
350	0.889	-7.043	0.198



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## TABULATION OF VERTICAL AZIMUTH PATTERN

Angle	Field	dBk	ERP kW
	0.711	-8.983	0.126
10	0.739	-8.648	0.137
20	0.731	-8.742	0.134
30	0.686	-9.294	0.118
40	0.589	-10.618	0.087
50	0.474	-12.505	0.056
60	0.374	-14.563	0.035
70	0.302	-16.420	0.023
80	0.265	-17.556	0.018
90	0.229	-18.824	0.013
100	0.171	-21.361	0.007
110	0.114	-24.883	0.003
120	0.058	-30.752	0.001
130	0.029	-36.773	0.000
140	0.015	-42.499	0.000
150	0.011	-45.193	0.000
160	0.019	-40.446	0.000
170	0.028	-37.077	0.000
180	0.029	-36.773	0.000
190	0.042	-33.556	0.000
200	0.054	-31.373	0.001
210	0.077	-28.291	0.001
220	0.116	-24.731	0.003
230	0.169	-21.463	0.007
240	0.228	-18.862	0.013
250	0.294	-16.654	0.022
260	0.366	-14.751	0.033
270	0.430	-13.351	0.046
280	0.480	-12.396	0.058
290	0.518	-11.734	0.067
300	0.548	-11.245	0.075
310	0.586	-10.663	0.086
320	0.604	-10.400	0.091
330	0.619	-10.187	0.096
340	0.638	-9.924	0.102
350	0.673	-9.460	0.113

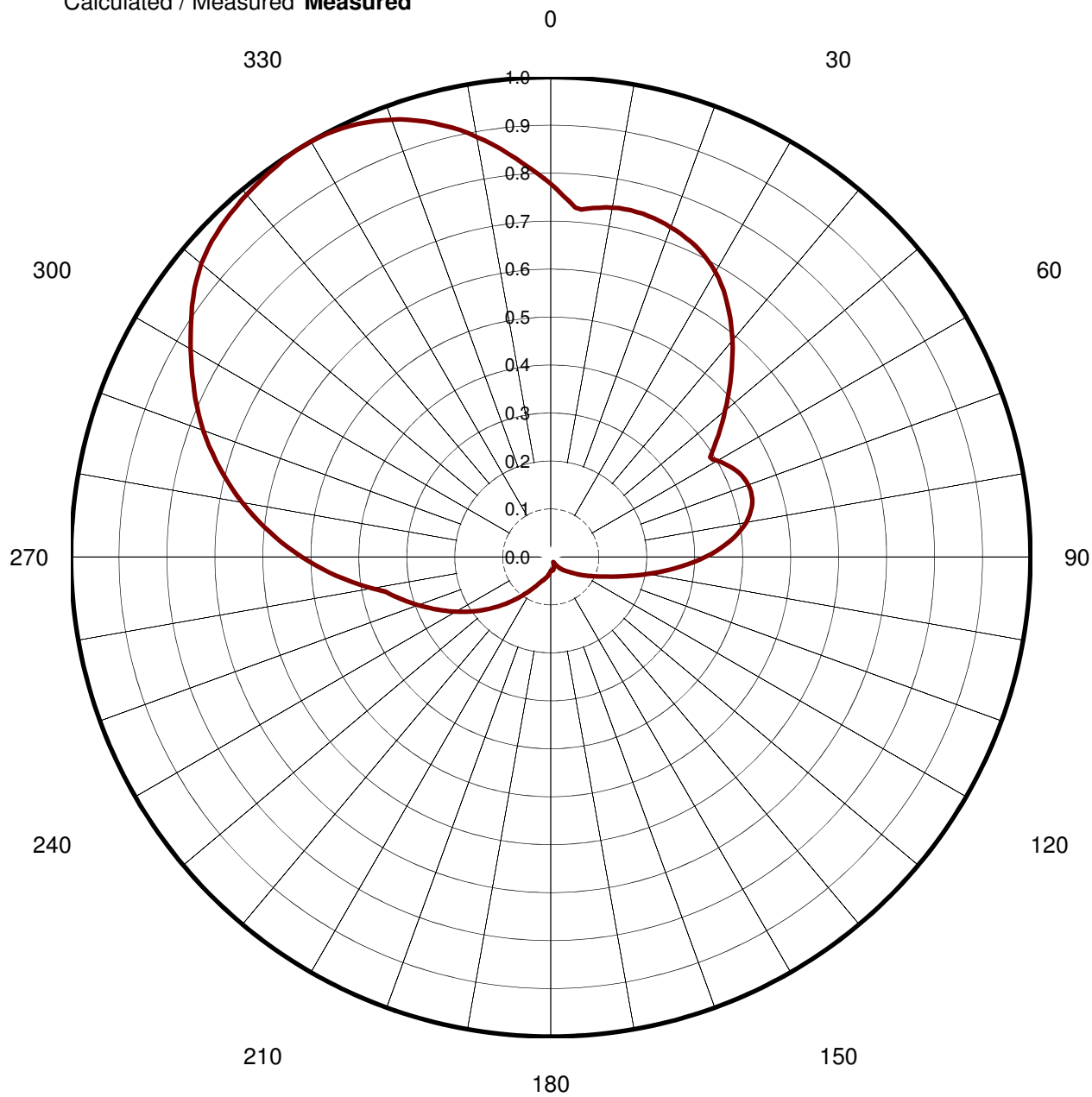


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## COMPOSITE AZIMUTH PATTERN

Calculated / Measured **Measured**





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## TABULATION OF COMPOSITE AZIMUTH PATTERN

Angle	Field	dBk	Power kW	Input Power
	0.778	-8.201	0.151	0.250
10	0.739	-8.648	0.137	0.250
20	0.731	-8.742	0.134	0.250
30	0.686	-9.294	0.118	0.250
40	0.589	-10.618	0.087	0.250
50	0.474	-12.505	0.056	0.250
60	0.401	-13.958	0.040	0.250
70	0.438	-13.191	0.048	0.250
80	0.414	-13.681	0.043	0.250
90	0.322	-15.863	0.026	0.250
100	0.205	-19.786	0.011	0.250
110	0.120	-24.437	0.004	0.250
120	0.076	-28.404	0.001	0.250
130	0.048	-32.396	0.001	0.250
140	0.032	-35.918	0.000	0.250
150	0.016	-41.938	0.000	0.250
160	0.019	-40.446	0.000	0.250
170	0.028	-37.077	0.000	0.250
180	0.029	-36.773	0.000	0.250
190	0.042	-33.556	0.000	0.250
200	0.054	-31.373	0.001	0.250
210	0.077	-28.291	0.001	0.250
220	0.116	-24.731	0.003	0.250
230	0.169	-21.463	0.007	0.250
240	0.228	-18.862	0.013	0.250
250	0.294	-16.654	0.022	0.250
260	0.378	-14.471	0.036	0.250
270	0.519	-11.717	0.067	0.250
280	0.653	-9.722	0.107	0.250
290	0.771	-8.280	0.149	0.250
300	0.867	-7.260	0.188	0.250
310	0.951	-6.457	0.226	0.250
320	0.986	-6.143	0.243	0.250
330	1.000	-6.021	0.250	0.250
340	0.970	-6.285	0.235	0.250
350	0.889	-7.043	0.198	0.250





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## CUSTOMER GAIN SUMMARY

Azimuth Pattern Gain of Horizontal Polarization	3.88 (5.89 dB)
Elevation Pattern Gain Per Polarization	0.65 (-1.87 dB)
Peak Gain of Horizontal Polarization	2.52 (4.02 dB)



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## ELEVATION PATTERN

RMS Gain at Main Lobe    **0.65**    **-( 1.87 dB )**  
Per Polarization  
Calculated / Measured    **Calculated**

Beam Tilt    **0 deg**  
Frequency    **98.7 MHz**

