

EXHIBIT 9

ENGINEERING STATEMENT  
IN SUPPORT OF REQUEST FOR PROGRAM TEST AUTHORIZATION  
AND STATION LICENSE FOR AUXILIARY OPERATION  
**WSLT(FM), CLEARWATER, SOUTH CAROLINA**  
DECEMBER 2005

This engineering statement has been prepared on behalf of WGAC License, LLC (“WGAC”), licensee of FM radio station WSLT, Clearwater, South Carolina, in support of its application for a Program Test Authorization (PTA) and station license for auxiliary operation to cover its construction permit granted on November 29, 2005 (FCC File Number BXPB-20051128AHU).

At present WSLT(FM) is authorized to operate on Channel 252C3 (98.3 MHz) with maximum 11.5 kW effective radiated power (ERP) and 148 meters antenna height above average terrain (HAAT) using a directional antenna. WGAC was granted a construction permit (CP) (BXPB-20051128AHU) to operate an auxiliary facility for WSLT(FM) with maximum 6.2 kW ERP and 148 meters HAAT using a directional FM antenna.

WGAC has completed the construction of WSLT(FM) auxiliary facility according to the terms of its CP and filing its application for a PTA and station license for the auxiliary operation on the FCC Form 302-FM.

The following information is provided to address the Special operating conditions or restrictions specified in the CP.

Condition No. 2: The attached Appendix A provides the complete proof-of-performance for the main (WSLT(FM) and the interleaved auxiliary FM antenna to establish horizontal plane radiation patterns for both the horizontally and vertically polarized radiation components. The proof-of-performance has been furnished by Shively Labs, the manufacturer of the directional FM antenna.

Condition No. 3: The attached Appendix B provides an affidavit of William R. Gore, a Georgia Professional Surveyor, to certify the directional FM antenna has been oriented at the proper azimuth.

Condition No.4: The attached Appendix C contains a statement from Doug Holland, Inc. concerning the installation of the directional FM antenna according to the requirements of the CP.

Condition No. 5: According to the directional antenna proof-of-performance and antenna gain the maximum effective radiated will be 6.2 kilowatts and the minimum radiation between azimuths N 320° E and N 340° E will be less than 0.76 kilowatts. A composite radiation pattern in relative field strength units is also included in the proof-of-performance exhibit.

APPENDIX A

COMPLETE PROOF-OF-PERFORMANCE  
MAIN AND AUXILIARY DIRECTIONAL ANTENNA SYSTEM

IN SUPPORT OF REQUEST FOR PROGRAM TEST AUTHORIZATION  
AND STATION LICENSE FOR AUXILIARY OPERATION  
**WSLT(FM), CLEARWATER, SOUTH CAROLINA**  
DECEMBER 2005

S.O. 24186

Report of Test 6810-2D/1D-IAD-DA

for

WGAC LICENSE, LLC

WSLT 98.3 MHz CLEARWATER, SC

## **OBJECTIVE:**

The objective of this test was to demonstrate the directional characteristics of a 6810-2D/1D-IAD-DA to meet the needs of WSLT and to comply with the requirements of the FCC construction permit, file number BPH-20050503ABV, which authorizes a standard analog signal. This report also demonstrates that the interleaved digital antenna also complies with the requirements of this construction permit. The azimuth pattern of the digital antenna is exactly the same as that of the analog. The elevation pattern and gain of the digital antenna is different and is described in Figures 3A and 4A.

## **RESULTS:**

The measured azimuth pattern for the 6810-2D/1D-IAD-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 patterns of the antenna are shown in Figure 3 (analog) and Figure 3A (digital). Construction permit file number BPH-20050503ABV indicates that the Horizontal radiation component shall not exceed 11.5 kW at any azimuth and is restricted to the following values at the azimuths specified:

320 - 340 Degrees T: 1.40 kW

From Figure 1, the maximum radiation of the Horizontal component occurs at 075 Degrees T to 122 Degrees T. At the restricted azimuth of 320 - 340 Degrees T the Vertical component is 10.17 dB down from the maximum of 11.5kW, or 1.10 kW.

**THE 2 BAY ANALOG ANTENNA:**

The R.M.S. of the Horizontal component is 0.780. The total Horizontal power gain is 1.711. The R.M.S. of the Vertical component is 0.742. The total Vertical power gain is 1.677. See Figure 4 for calculations. The R.M.S. of the FCC composite pattern is 0.896. The R.M.S. of the measured composite pattern is 0.789. Eighty-five percent (85%) of the original authorized FCC composite pattern is 0.761. Therefore this pattern complies with the FCC requirement of 73.316(c)(2)(ix)(A).

**THE 1 BAY INTERLEAVED IBOC ANTENNA:**

The R.M.S. of the Horizontal component is the same as the analog antenna. The total Horizontal power gain is 0.795. The R.M.S. of the Vertical component is the same as the analog antenna. The total Vertical power gain is 0.779. See Figure 4A for calculations. As stated before, the azimuth pattern of the digital antenna is identical to the azimuth pattern of the analog antenna. Therefore the digital antenna pattern also complies with the FCC requirement of 73.316(c)(2)(ix)(A).

**METHOD OF DIRECTIONALIZATION:**

One bay of the 6810-2D/1D-IAD-DA was mounted on a tower of exact scale to a Pi-Rod 36-X tower. 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 BPH-20050503ABV, a single level of the 6810-2D/1D-IAD-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 9<sup>th</sup> 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 442.35 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 unpadding 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:

A handwritten signature in blue ink, appearing to read "Robert A. Surette", with a long horizontal flourish extending to the right.

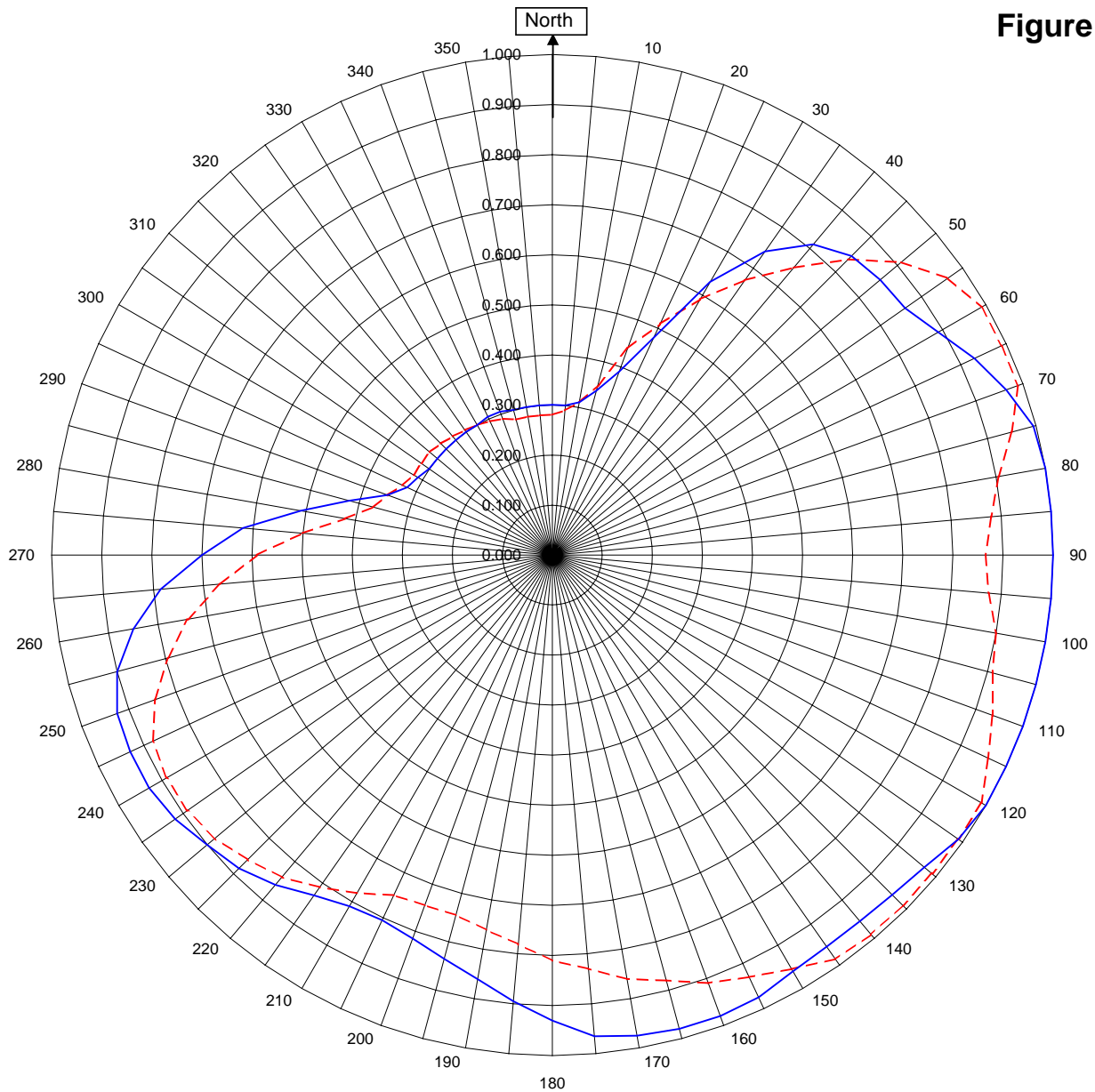
Robert A. Surette  
Manager of RF Engineering  
S/O 24186  
September 23, 2005



# Shively Labs

Shively Labs, a division of Howell Laboratories, Inc. Bridgton, ME (207)647-3327

Figure 1



## WSLT Clearwater, SC

24186

September 23, 2005

Horizontal RMS	0.780
Vertical RMS	0.742
H/V Composite RMS	0.789

Frequency	98.3 / 442.35 mHz
Plot	Relative Field
Scale	4.5 : 1

Antenna Model	6810-2D/1D-IAD-DA
Pattern Type	Directional Azimuth

See Figure 2 for Mechanical Details

Figure 1a

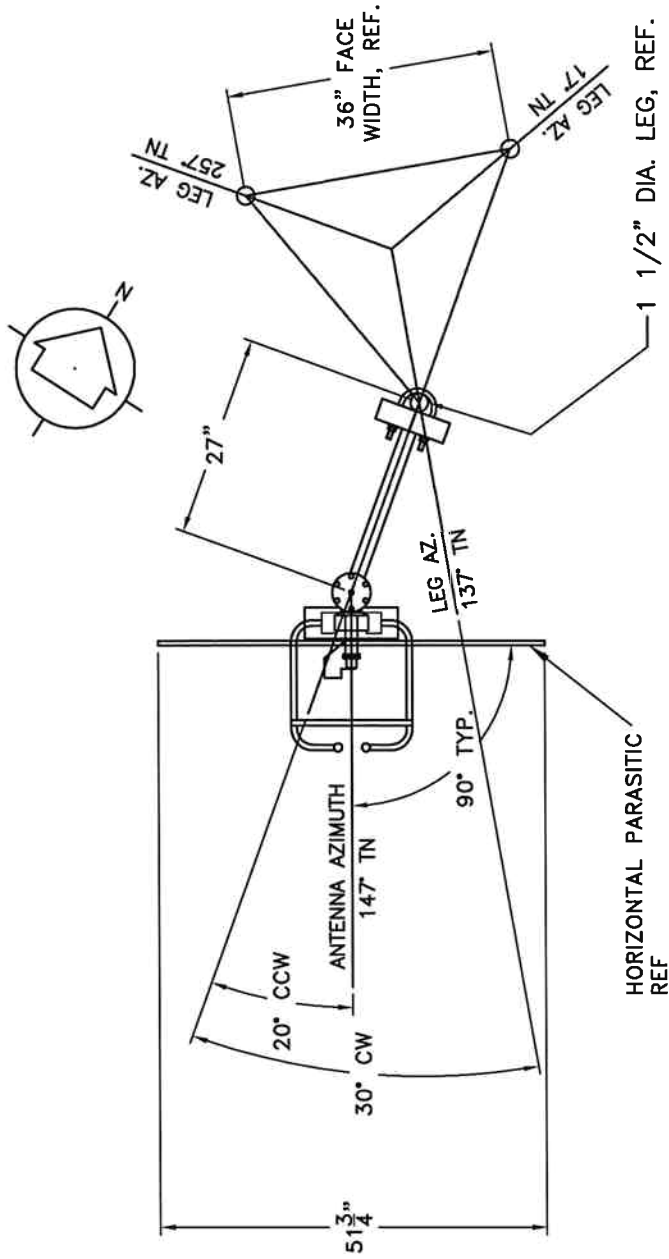
Tabulation of Horizontal Azimuth Pattern  
WSLT Clearwater, SC

Azimuth	Rel Field	Azimuth	Rel Field
0	0.300	180	0.930
10	0.310	190	0.860
20	0.390	200	0.815
30	0.630	210	0.810
40	0.810	220	0.860
45	0.845	225	0.885
50	0.855	230	0.900
60	0.890	240	0.930
70	0.965	250	0.925
80	1.000	260	0.850
90	1.000	270	0.700
100	1.000	280	0.510
110	1.000	290	0.350
120	1.000	300	0.310
130	0.970	310	0.300
135	0.960	315	0.300
140	0.955	320	0.300
150	0.960	330	0.300
160	0.980	340	0.305
170	0.975	350	0.300

Figure 1b

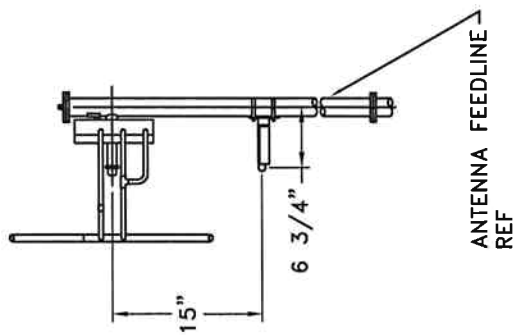
Tabulation of Vertical Azimuth Pattern  
WSLT Clearwater, SC

Azimuth	Rel Field	Azimuth	Rel Field
0	0.280	180	0.810
10	0.310	190	0.760
20	0.440	200	0.745
30	0.590	210	0.780
40	0.750	220	0.840
45	0.835	225	0.860
50	0.910	230	0.880
60	0.990	240	0.890
70	0.990	250	0.845
80	0.905	260	0.740
90	0.865	270	0.590
100	0.900	280	0.420
110	0.935	290	0.350
120	0.990	300	0.320
130	0.990	310	0.320
135	0.990	315	0.315
140	0.990	320	0.310
150	0.955	330	0.300
160	0.910	340	0.290
170	0.860	350	0.280



## TOP VIEW

TOWER: PIROD 36 FACE



## SIDE VIEW

## SHIVELY LABS

A DIVISION OF HOWELL LABORATORIES INC., BRIDGTON, MAINE

SHOP ORDER:	FREQUENCY:	SCALE:	DRAWN BY:
24186	98.3 MHz.	N.T.S.	ASP
APPROVED BY:			

MODEL:

6810-2D/1D-IAD-DIRECTIONAL ANTENNA

DATE:

9/27/05

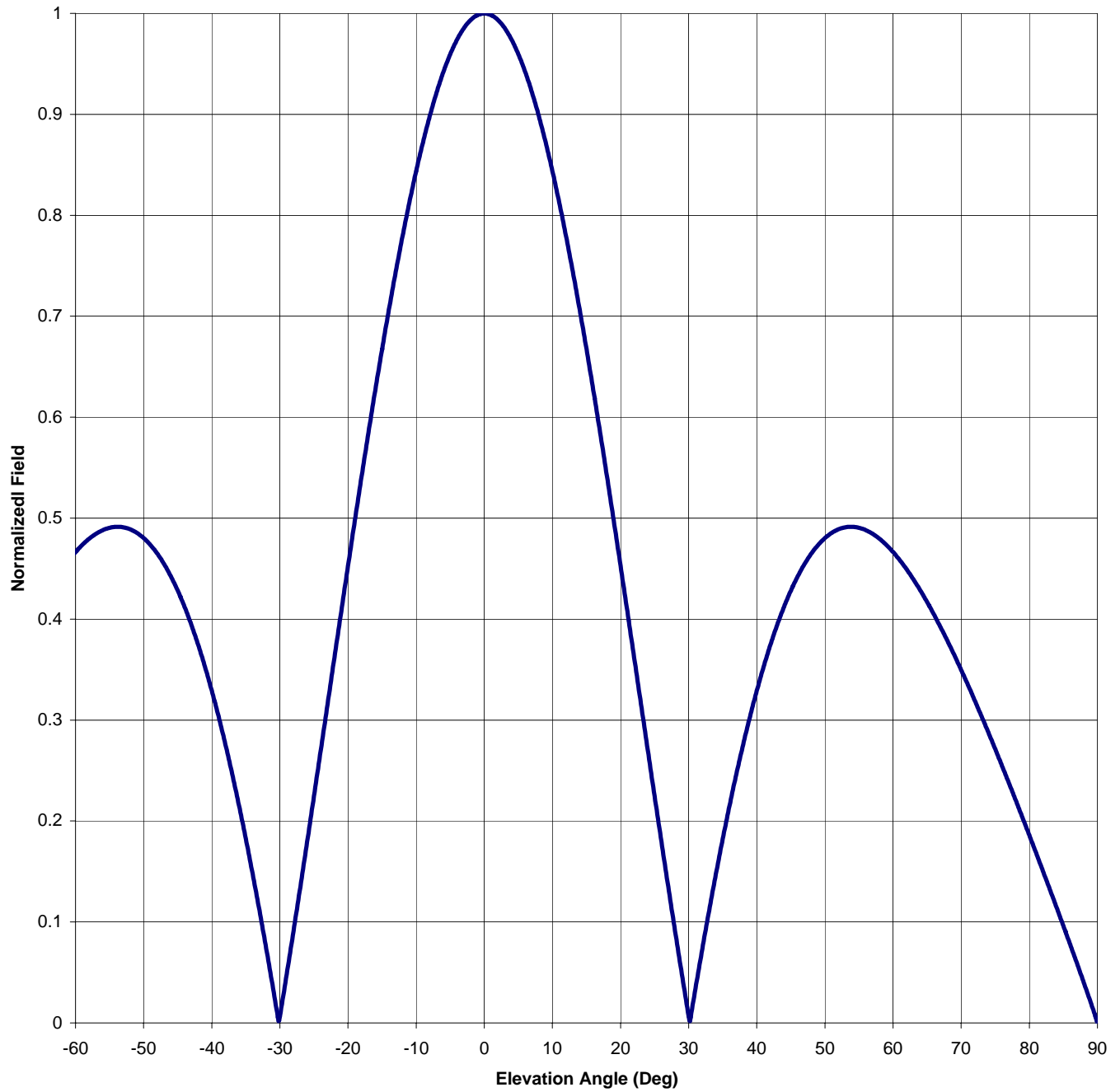
FIGURE 2

ANTENNA HEADING: 147° TRUE NORTH

Antenna Mfg.: Shively Labs  
Antenna Type: 6810-2D/1D-IAD-DA  
Station: WSLT  
Frequency: 98.3  
Channel #: 252  
Figure: 3

Date: 10/5/2005

Beam Tilt	0	
Gain (Max)	1.711	2.332 dB
Gain (Horizon)	1.711	2.332 dB



Antenna Mfg.: Shively Labs  
Antenna Type: 6810-2D/1D-IAD-DA

Date: 10/5/2005

Station: WSLT

Beam Tilt 0

Frequency: 98.3

Gain (Max) 1.711

2.332 dB

Channel #: 252

Gain (Horizon) 1.711

2.332 dB

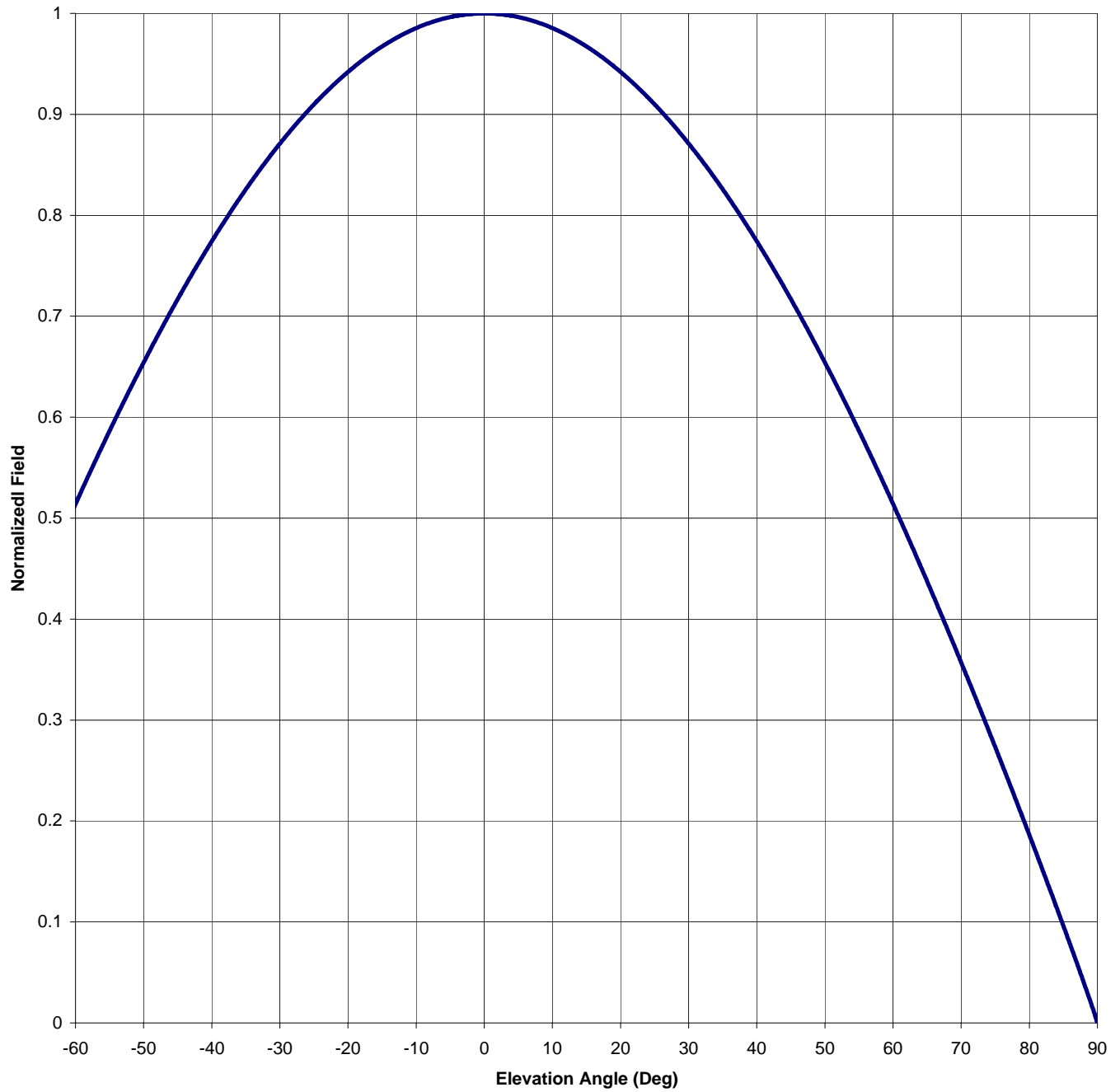
Figure: 3

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.412	0	1.000	46	0.442
-89	0.021	-43	0.394	1	0.998	47	0.455
-88	0.040	-42	0.375	2	0.993	48	0.465
-87	0.059	-41	0.353	3	0.985	49	0.473
-86	0.078	-40	0.329	4	0.974	50	0.480
-85	0.096	-39	0.303	5	0.960	51	0.485
-84	0.114	-38	0.276	6	0.942	52	0.489
-83	0.132	-37	0.247	7	0.922	53	0.491
-82	0.150	-36	0.215	8	0.898	54	0.491
-81	0.168	-35	0.182	9	0.872	55	0.490
-80	0.186	-34	0.148	10	0.844	56	0.488
-79	0.203	-33	0.111	11	0.813	57	0.484
-78	0.221	-32	0.073	12	0.779	58	0.480
-77	0.238	-31	0.034	13	0.744	59	0.474
-76	0.255	-30	0.006	14	0.707	60	0.466
-75	0.271	-29	0.048	15	0.667	61	0.458
-74	0.288	-28	0.091	16	0.627	62	0.449
-73	0.304	-27	0.135	17	0.585	63	0.439
-72	0.319	-26	0.179	18	0.542	64	0.428
-71	0.335	-25	0.225	19	0.498	65	0.417
-70	0.350	-24	0.270	20	0.453	66	0.405
-69	0.364	-23	0.316	21	0.407	67	0.392
-68	0.378	-22	0.362	22	0.362	68	0.378
-67	0.392	-21	0.407	23	0.316	69	0.364
-66	0.405	-20	0.453	24	0.270	70	0.350
-65	0.417	-19	0.498	25	0.225	71	0.335
-64	0.428	-18	0.542	26	0.179	72	0.319
-63	0.439	-17	0.585	27	0.135	73	0.304
-62	0.449	-16	0.627	28	0.091	74	0.288
-61	0.458	-15	0.667	29	0.048	75	0.271
-60	0.466	-14	0.707	30	0.006	76	0.255
-59	0.474	-13	0.744	31	0.034	77	0.238
-58	0.480	-12	0.779	32	0.073	78	0.221
-57	0.484	-11	0.813	33	0.111	79	0.203
-56	0.488	-10	0.844	34	0.148	80	0.186
-55	0.490	-9	0.872	35	0.182	81	0.168
-54	0.491	-8	0.898	36	0.215	82	0.150
-53	0.491	-7	0.922	37	0.247	83	0.132
-52	0.489	-6	0.942	38	0.276	84	0.114
-51	0.485	-5	0.960	39	0.303	85	0.096
-50	0.480	-4	0.974	40	0.329	86	0.078
-49	0.473	-3	0.985	41	0.353	87	0.059
-48	0.465	-2	0.993	42	0.375	88	0.040
-47	0.455	-1	0.998	43	0.394	89	0.021
-46	0.442	0	1.000	44	0.412	90	0.000
-45	0.428			45	0.428		

Antenna Mfg.: Shively Labs  
Antenna Type: 6810-2D/1D-IAD-DA  
Station: WSLT  
Frequency: 98.3  
Channel #: 252  
Figure: 3A

Date: 10/5/2005

Beam Tilt	0	
Gain (Max)	0.795	-0.995 dB
Gain (Horizon)	0.795	-0.995 dB



Antenna Mfg.: Shively Labs  
Antenna Type: 6810-2D/1D-IAD-DA

Date: 10/5/2005

Station: WSLT

Beam Tilt 0

Frequency: 98.3

Gain (Max) 0.795

-0.995 dB

Channel #: 252

Gain (Horizon) 0.795

-0.995 dB

Figure: 3A

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.729	0	1.000	46	0.705
-89	0.021	-43	0.741	1	1.000	47	0.693
-88	0.040	-42	0.752	2	0.999	48	0.680
-87	0.059	-41	0.763	3	0.999	49	0.667
-86	0.078	-40	0.774	4	0.998	50	0.654
-85	0.096	-39	0.785	5	0.996	51	0.641
-84	0.114	-38	0.796	6	0.995	52	0.628
-83	0.133	-37	0.806	7	0.993	53	0.614
-82	0.151	-36	0.816	8	0.991	54	0.600
-81	0.168	-35	0.826	9	0.988	55	0.586
-80	0.186	-34	0.835	10	0.985	56	0.572
-79	0.204	-33	0.845	11	0.982	57	0.558
-78	0.221	-32	0.854	12	0.979	58	0.544
-77	0.239	-31	0.862	13	0.975	59	0.529
-76	0.256	-30	0.871	14	0.971	60	0.514
-75	0.273	-29	0.879	15	0.967	61	0.499
-74	0.290	-28	0.887	16	0.963	62	0.484
-73	0.307	-27	0.895	17	0.958	63	0.469
-72	0.324	-26	0.903	18	0.953	64	0.453
-71	0.341	-25	0.910	19	0.948	65	0.437
-70	0.357	-24	0.917	20	0.942	66	0.422
-69	0.373	-23	0.924	21	0.936	67	0.406
-68	0.390	-22	0.930	22	0.930	68	0.390
-67	0.406	-21	0.936	23	0.924	69	0.373
-66	0.422	-20	0.942	24	0.917	70	0.357
-65	0.437	-19	0.948	25	0.910	71	0.341
-64	0.453	-18	0.953	26	0.903	72	0.324
-63	0.469	-17	0.958	27	0.895	73	0.307
-62	0.484	-16	0.963	28	0.887	74	0.290
-61	0.499	-15	0.967	29	0.879	75	0.273
-60	0.514	-14	0.971	30	0.871	76	0.256
-59	0.529	-13	0.975	31	0.862	77	0.239
-58	0.544	-12	0.979	32	0.854	78	0.221
-57	0.558	-11	0.982	33	0.845	79	0.204
-56	0.572	-10	0.985	34	0.835	80	0.186
-55	0.586	-9	0.988	35	0.826	81	0.168
-54	0.600	-8	0.991	36	0.816	82	0.151
-53	0.614	-7	0.993	37	0.806	83	0.133
-52	0.628	-6	0.995	38	0.796	84	0.114
-51	0.641	-5	0.996	39	0.785	85	0.096
-50	0.654	-4	0.998	40	0.774	86	0.078
-49	0.667	-3	0.999	41	0.763	87	0.059
-48	0.680	-2	0.999	42	0.752	88	0.040
-47	0.693	-1	1.000	43	0.741	89	0.021
-46	0.705	0	1.000	44	0.729	90	0.000
-45	0.717			45	0.717		



## VALIDATION OF TOTAL POWER GAIN CALCULATION

WSLT Clearwater, SC

Model 6810-2D / 1D IAD

Elevation Gain of Antenna 0.99

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

Horizontal RMS value divided by the Vertical RMS value equals the Horiz. - Vert. Ratio

H RMS 0.78 V RMS 0.742 H/V Ratio 1.051

Elevation Gain of Horizontal Component 1.041

Elevation Gain of Vertical Component 0.942

Horizontal Azimuth Gain equals 1/(RMS)SQ. 1.644

Vertical Azimuth Gain equals 1/(RMS/Max Vert)SQ. 1.780

Max. Vertical 0.99

**\*Total Horizontal Power Gain is the Elevation Gain Times the Azimuth Gain**

Total Horizontal Power Gain = 1.711

**\*Total Vertical Power Gain is the Elevation Gain Times the Azimuth Gain**

Total Vertical Power Gain = 1.677

=====

ERP divided by Horizontal Power Gain equals Antenna Input Power

11.5 KW ERP Equals 6.723 KW Antenna Input Power

Antenna Input Power times Vertical Power Gain equals Vertical ERP

6.723 KW Times 1.677 KW Equals 11.271 KW ERP

Maximum Value of the Vertical Component squared times the Maximum ERP equals the Vertical ERP

0.99 Equals 11.271 KW Vertical ERP

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

## VALIDATION OF TOTAL POWER GAIN CALCULATION

WSLT Clearwater, SC

Model 6810-2D /1D IAD

Elevation Gain of Antenna 0.46

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

Horizontal RMS value divided by the Vertical RMS value equals the Horiz. - Vert. Ratio

H RMS 0.78 V RMS 0.742 H/V Ratio 1.051

Elevation Gain of Horizontal Component 0.484

Elevation Gain of Vertical Component 0.438

Horizontal Azimuth Gain equals 1/(RMS)SQ. 1.644

Vertical Azimuth Gain equals 1/(RMS/Max Vert)SQ. 1.780

Max. Vertical 0.99

**\*Total Horizontal Power Gain is the Elevation Gain Times the Azimuth Gain**

Total Horizontal Power Gain = 0.795

**\*Total Vertical Power Gain is the Elevation Gain Times the Azimuth Gain**

Total Vertical Power Gain = 0.779

=====

ERP divided by Horizontal Power Gain equals Antenna Input Power

0.115 KW ERP Equals 0.145 KW Antenna Input Power

Antenna Input Power times Vertical Power Gain equals Vertical ERP

0.145 KW Times 0.779 KW Equals 0.113 KW ERP

Maximum Value of the Vertical Component squared times the Maximum ERP equals the Vertical ERP

0.99 Equals 0.113 KW Vertical ERP

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

APPENDIX B

DIRECTIONAL ANTENNA ORIENTATION

MAIN AND AUXILIARY DIRECTIONAL ANTENNA SYSTEM

IN SUPPORT OF REQUEST FOR PROGRAM TEST AUTHORIZATION  
AND STATION LICENSE FOR AUXILIARY OPERATION  
**WSLT(FM), CLEARWATER, SOUTH CAROLINA**  
DECEMBER 2005

**William R. Gore Professional Land Surveyors, Inc.**

1804 Central Avenue  
Augusta, Georgia 30904

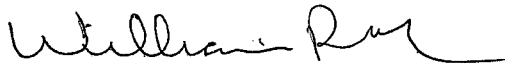
Telephone: 706 738 8771      FAX: 706 736 6249      E-mail: [wgsurvey@knology.net](mailto:wgsurvey@knology.net)

Date: September 30, 2005

Beasley Tower Site  
Off Washington Road near King Road  
Martinez, Georgia

Re: Beasley Tower Site WGAC

I hereby certify that on 9-30-05 Gore Land Surveying staked an azimuth line of 147-16-19 at the above-mentioned site. On 10-04-05 we used this staked line to check alignment on antenna installed on 10-02-05 and found antenna to be aligned along azimuth 147-16-19.



William R. Gore  
Georgia Professional Surveyor  
Registration No. 2502

APPENDIX C

DIRECTIONAL ANTENNA INSTALLATION

MAIN AND AUXILIARY DIRECTIONAL ANTENNA SYSTEM

IN SUPPORT OF REQUEST FOR PROGRAM TEST AUTHORIZATION  
AND STATION LICENSE FOR AUXILIARY OPERATION  
**WSLT(FM), CLEARWATER, SOUTH CAROLINA**  
DECEMBER 2005

Doug Holland, Inc.  
1871 Sweetbriar Lane  
Birmingham, AL 35235  
205-853-8492

This letter of certification is provided to fulfill FCC Permit BPH-20050503ABV for WSLT, 98.3 MHz. Channel 252 C3, Clearwater, SC.

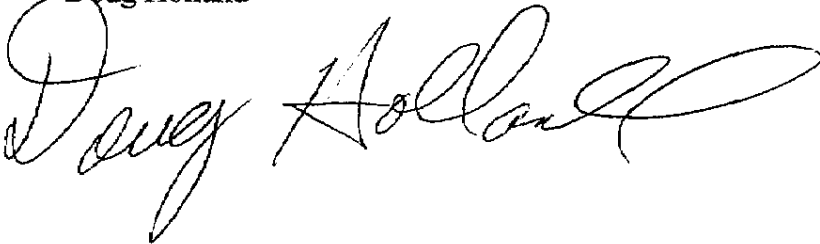
Condition Seven (7) of the construction permit requests that WGAC-AM operate non-directional if required during construction. Further more a request for impedance measurements and a partial proof are also requested. WGAC-AM is non-directional during daytime hours of operation from this facility. The antenna system is a folded unipole and the tower is at ground potential.

Feed impedance measurements made before and after installation of the antenna and transmission line showed no change in the impedance, which would be expected with a folded unipole.

I also examined the antenna installation and will stipulate that it complies with the requirements of the CP.

I have filed engineering statements and documents with the Commission on numerous occasions and my documents have been accepted regularly.

Doug Holland

A handwritten signature in black ink, appearing to read "Doug Holland", with a large, stylized flourish at the end.