Shively Lab
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- An Employee-Owned Company -

EXHIBIT B
APPLICATION FOR STATION LICENSE
REQUEST FOR PROGRAM TEST AUTHORITY
RADIO TRAINING NETWORK, INC.
WLFH (FM) RADIO STATION
CH 205C2 - 88.9 MHZ - 1.2 (H) / 45 (V) KW
CLAXTON, GEORGIA
August 2013

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S.O. 30760

Report of Test 6025-3-2/2/2/2-Slant (12°)-Special-DA

for

Radio Training Network, INC.

WLFH 88.9 MHz Claxton, GA

OBJECTIVE:

The objective of this test was to demonstrate the directional characteristics of a 6025-3-2/2/2/2-Slant (12°)-Special-DA to meet the needs of WFLH and to comply with the requirements of the FCC construction permit, file number BNPED-20071022BIT. This test characterizes only the radiation characteristics of the antenna when mounted on the tower as described. It does not represent or imply any guarantee of specific coverage which can be influenced by factors beyond the scope of this test.

RESULTS:

The following Figures are the results of the measurements from our pattern range:

Figure 1A - Measured Azimuth Pattern with the FCC Composite
Figure 1B - Measured Composite Azimuth Pattern with the FCC Composite
Figure 1C - Not shown. The Horizontal pattern is too small to plot or tabulate
Figure 1D - Tabulation of the Vertical Polarization for the Measured Azimuth Pattern
Figure 1E - Tabulation of the Measured Composite Azimuth Pattern
Figure 1F - Tabulation of the FCC Composite

The calculated elevation pattern of the antenna is shown in Figure 3.

Construction permit file number BNPED-20071022BIT indicates that the Vertical radiation component shall not exceed 45.0 kW at any azimuth and is restricted to the following values at the azimuths specified:

90 to 100 Degrees True: 1.426 kilowatts
240 Degrees True: 6.705 kilowatts
350 Degrees True: 24.04 kilowatts

From Figure 1A, the maximum radiation of the Vertical component occurs at 304 Degrees True to 306 Degrees True. At the restricted azimuth of 90 to 100 Degrees True the Vertical component is 20.724 dB down from the maximum of 45.0 kW, or 0.381 kW. At the restricted azimuth of 240 Degrees True the Vertical component is 10.933 dB down from the maximum of 45.0 kW, or 3.630 kW. At the restricted azimuth of 350 Degrees True the Vertical component is 3.274 dB down from the maximum of 45.0 kW, or 21.18 kW.

The total Horizontal power gain is 0.190. The R.M.S. of the Vertical component is 0.562. The total Vertical power gain is 7.089. See Figure 4 for calculations. The R.M.S. of the FCC composite pattern is 0.636. The R.M.S. of the measured composite pattern is 0.562. Eighty-five percent (85%) of the original authorized FCC composite pattern is 0.540. Therefore this pattern complies with the FCC requirement of 73.316(c)(2)(ix)(A).

METHOD OF DIRECTIONALIZATION:

One bay of the 6025-3-2/2/2/2-Slant (12°)-Special-DA was mounted on a tower of precise scale to the 42" facetower at the WLFH site. The spacing of the antenna to the tower was varied to achieve the vertical patterns shown in Figure 1A. See Figure 2 for mechanical details.

METHOD OF MEASUREMENT:

As allowed by the construction permit, file number BNPED-20071022BIT, a single level of the 6025-3-2/2/2/2-Slant (12°)-Special-DA was set up on the Shively Labs 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 9th and 10th Editions 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

All testing is carried out in strict accordance with approved procedures under our ISO9001:2008.

TEST PROCEDURES:

The receiving antenna system is mounted so that the horizontal and vertical azimuth patterns are measured independently. The network analyzer was set to 400.05 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 1A.

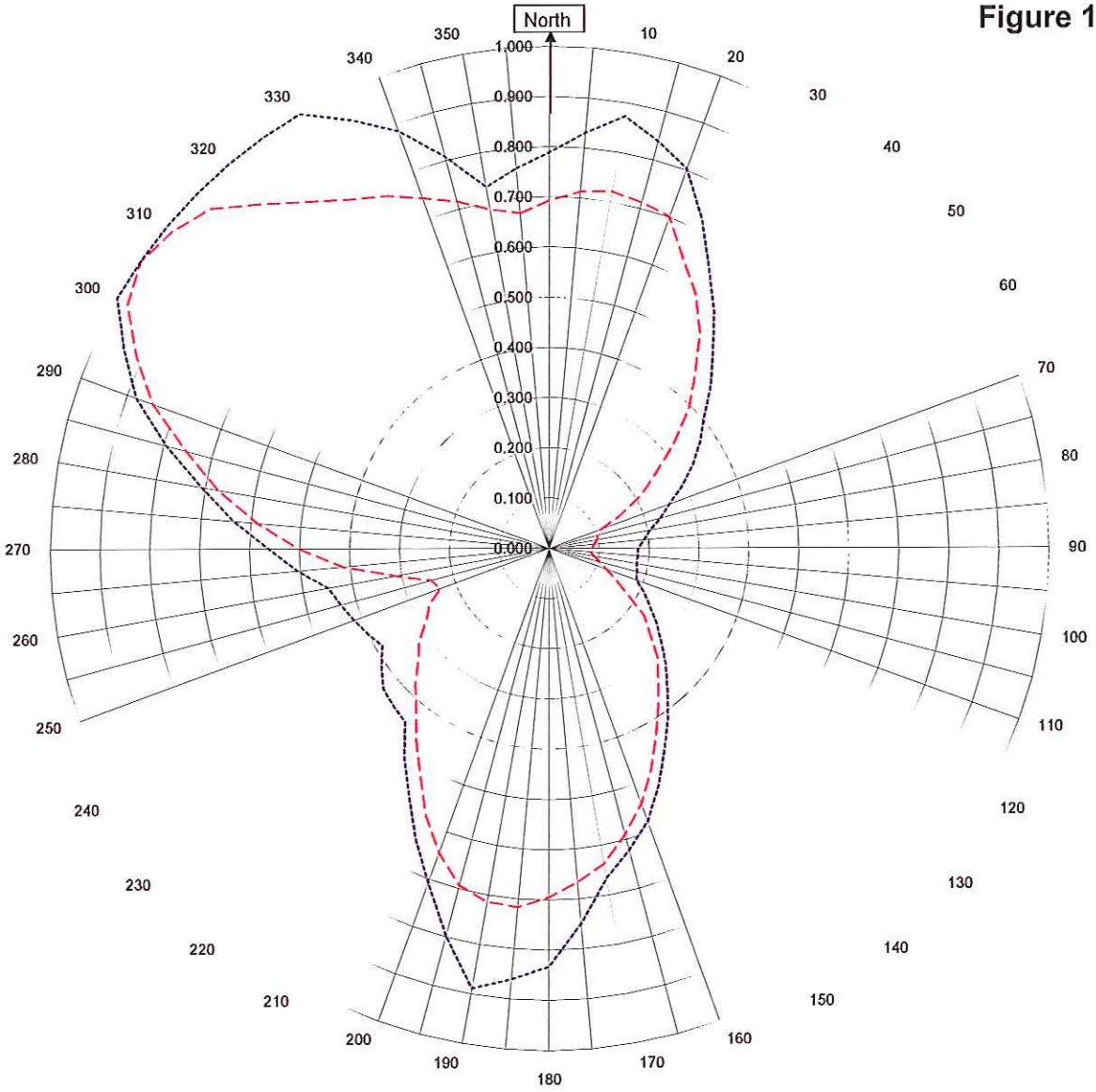
Respectfully submitted by:

Robert A. Surette
Director of Sales Engineering
S/O 30760
August 14, 2013

Shively Labs

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

Figure 1A



WLFH CLAXTON, GA.

30760

August 2, 2013

Horizontal RMS	0.000
Vertical RMS	0.562
H/V Composite RMS	0.562
FCC Composite RMS	0.636

Frequency	88.9 / 400.05 mHz
Plot	Relative Field
Scale	4.5 : 1
	See Figure 2 for Mechanical Details

Antenna Model	6025-3-2/2/2/2/-Spec.-DA
Pattern Type	Directional Azimuth

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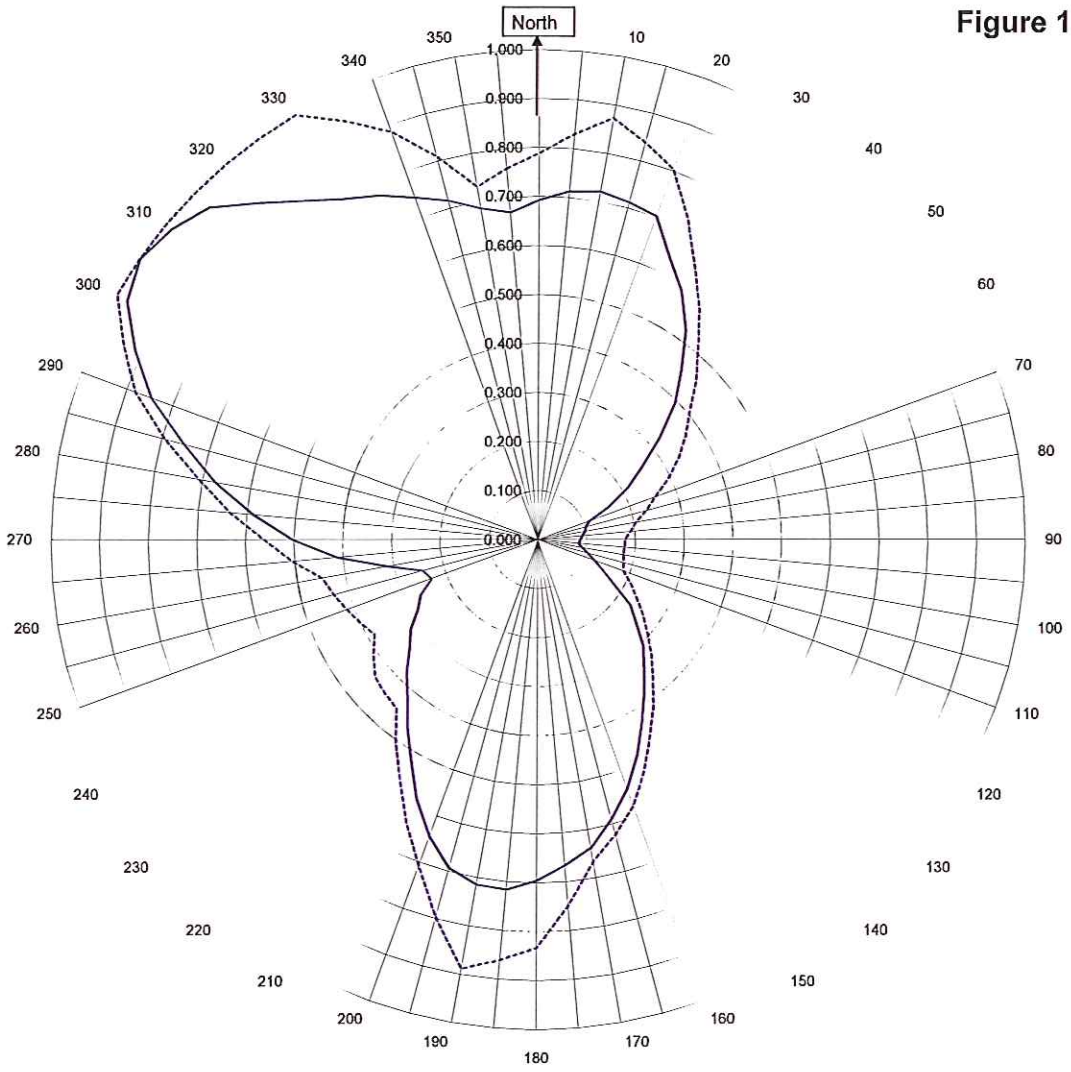
Figure 1B



WLFH CLAXTON, GA.

30760

August 2, 2013

_____H/VComposite RMS	0.562
.....FCC Composite RMS	0.636

Frequency	88.9 / 400.05 mHz
Plot	Relative Field
Scale	4.5 : 1
	See Figure 2 for Mechanical Details

Antenna Model	6025-3-2/2/2/2/-Spec.-DA
Pattern Type	Directional H/V Composite

Figure 1D

Tabulation of Vertical Azimuth Pattern
WLFH CLAXTON, GA.

Azimuth	Rel Field	Azimuth	Rel Field
0	0.693	180	0.695
10	0.721	190	0.714
20	0.702	200	0.644
30	0.586	210	0.516
40	0.454	220	0.414
45	0.395	225	0.379
50	0.325	230	0.342
60	0.211	240	0.284
70	0.111	250	0.232
80	0.097	260	0.312
90	0.086	270	0.502
100	0.092	280	0.674
110	0.124	290	0.846
120	0.180	300	0.976
130	0.264	310	0.986
135	0.307	315	0.959
140	0.339	320	0.897
150	0.428	330	0.803
160	0.540	340	0.743
170	0.637	350	0.686
		305	1.000

Figure 1E

Tabulation of Composite Azimuth Pattern
WLFH CLAXTON, GA.

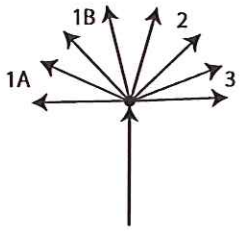
Azimuth	Rel Field	Azimuth	Rel Field
0	0.693	180	0.695
10	0.721	190	0.714
20	0.702	200	0.644
30	0.586	210	0.516
40	0.454	220	0.414
45	0.395	225	0.379
50	0.325	230	0.342
60	0.211	240	0.284
70	0.111	250	0.232
80	0.097	260	0.312
90	0.086	270	0.502
100	0.092	280	0.674
110	0.124	290	0.846
120	0.180	300	0.976
130	0.264	310	0.986
135	0.307	315	0.959
140	0.339	320	0.897
150	0.428	330	0.803
160	0.540	340	0.743
170	0.637	350	0.686
		305	1.000

Figure 1F

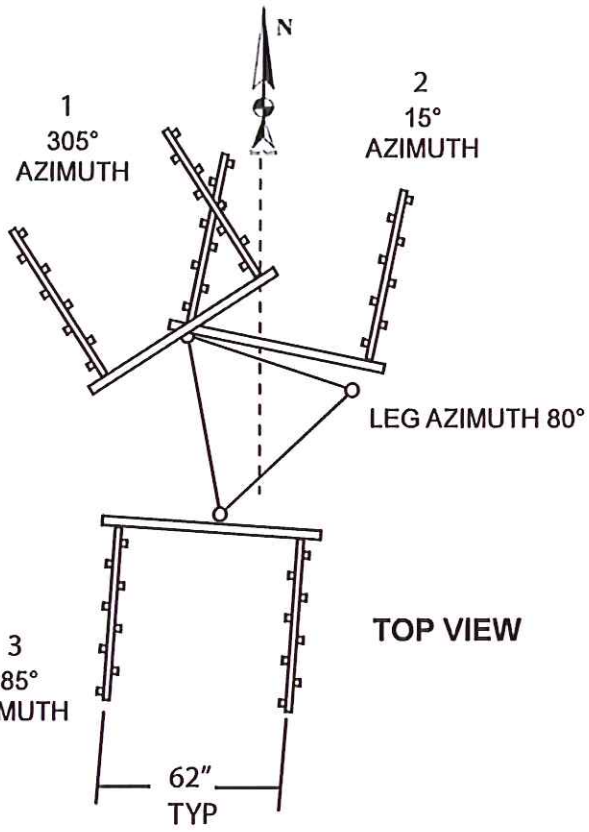
Tabulation of FCC Directional Composite
WLFH CLAXTON, GA.

Azimuth	Rel Field	Azimuth	Rel Field
0	0.788	180	0.833
10	0.873	190	0.889
20	0.804	200	0.707
30	0.640	210	0.562
40	0.509	220	0.449
50	0.405	230	0.434
60	0.332	240	0.386
70	0.256	250	0.416
80	0.204	260	0.449
90	0.178	270	0.562
100	0.178	280	0.707
110	0.186	290	0.881
120	0.233	300	1.000
130	0.293	310	1.000
140	0.368	320	1.000
150	0.462	330	1.000
160	0.578	340	0.885
170	0.666	350	0.731

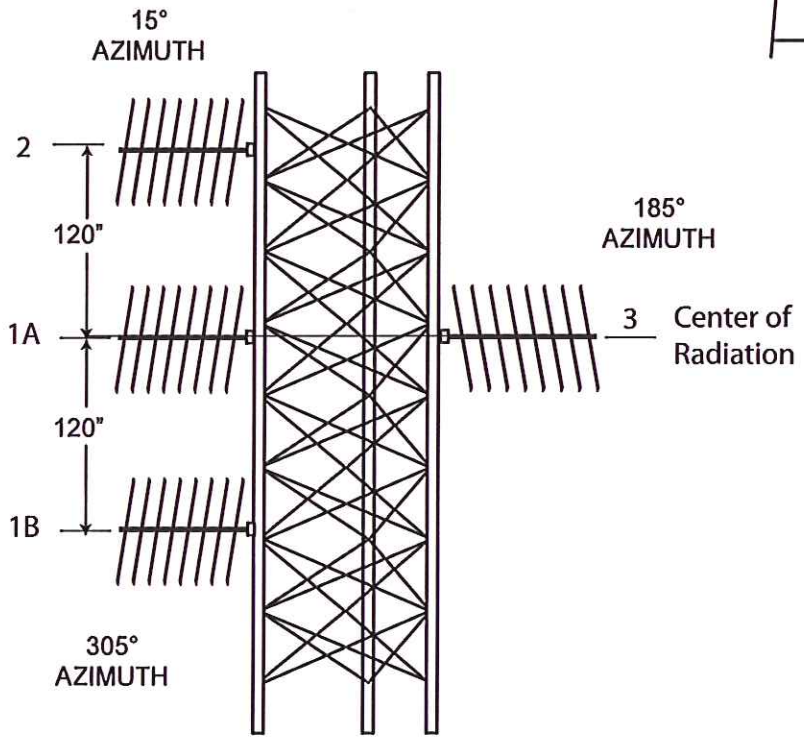
COAX SYSTEM
EQUAL PHASE
All antennas equal Power



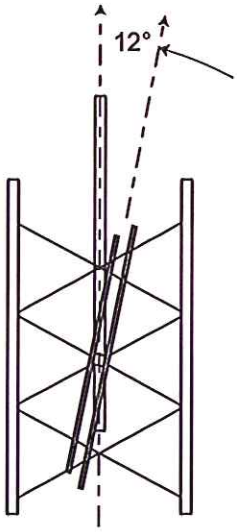
SCHEMATIC VIEW



TOP VIEW



ELEVATION VIEW



PARTIAL FRONT VIEW

SHIVELY LABS

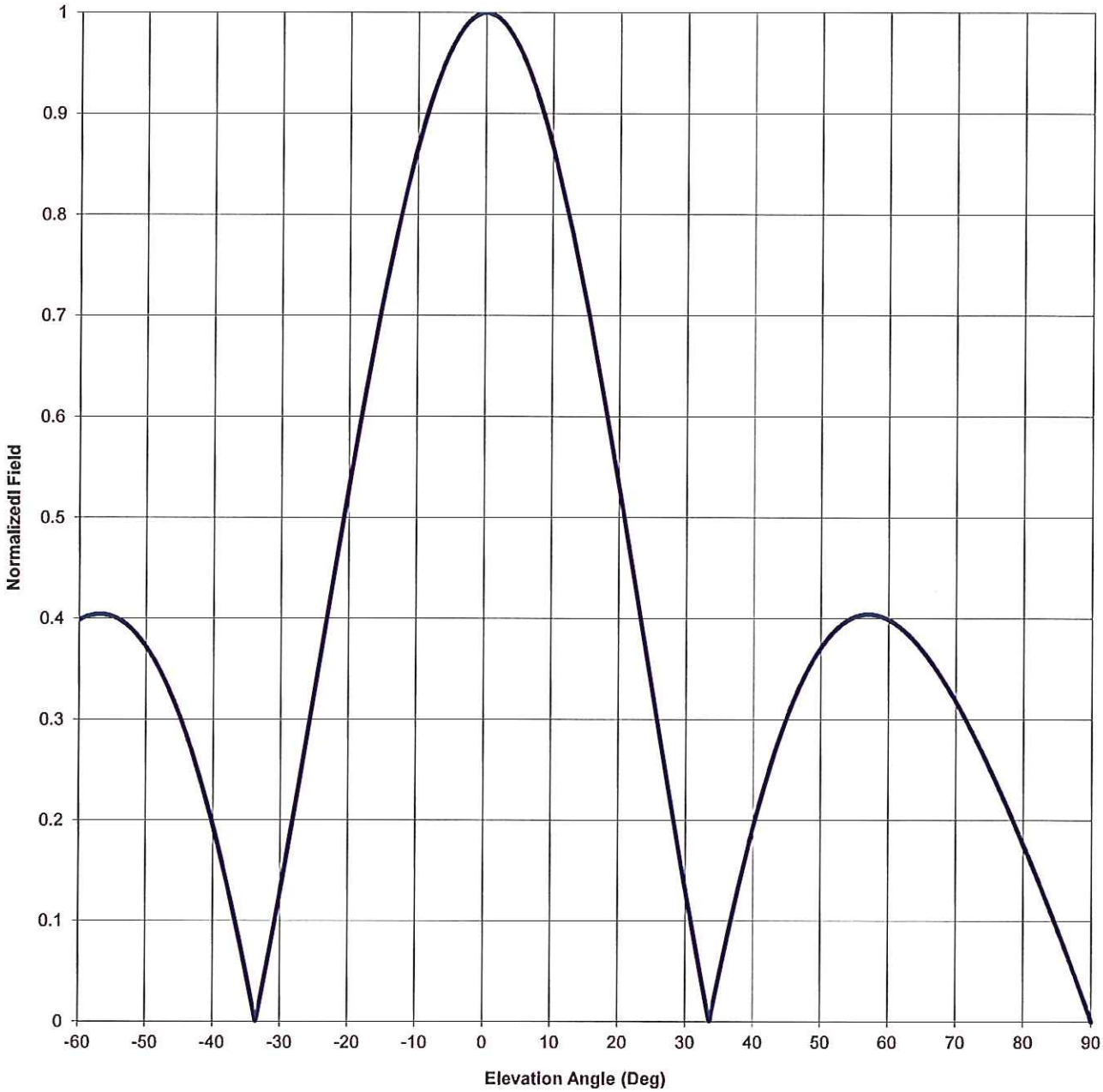
DIV. HOWELL LABS — BRIDGTON, MAINE USA

FIGURE 2, 88.9 MHz
WLFH Claxton, GA
6025-3-2/2/2/2-SLANT (12°)-Special-DA

SIZE	CODE IDENT. NO.	DRAWING NO.	REV
A	26750	RAS7302013	A

SCALE		SHEET
NONE	S/O 30760	1 OF 1

Antenna Mfg.:	Shively Labs			Date: 8/2/2013
Antenna Type:	6025-3-2/2/2/2-Spec-DA			
Station:	WLFH	Beam Tilt		0
Frequency:	88.9	Gain (Max)	7.089	8.506 dB
Channel #:	205	Gain (Horizon)	7.089	8.506 dB
Figure:	Figure 3			



Antenna Mfg.: Shively Labs
Antenna Type: 6025-3-2/2/2/2-Spec-DA
Station: WLFH
Frequency: 88.9
Channel #: 205
Figure: Figure 3

Beam Tilt 0
Gain (Max) 7.089 8.506 dB
Gain (Horizon) 7.089 8.506 dB

Date: 8/2/2013

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	0.285	0	1.000	46	0.320
-89	0.020	-43	0.265	1	0.999	47	0.336
-88	0.038	-42	0.243	2	0.995	48	0.349
-87	0.056	-41	0.220	3	0.988	49	0.361
-86	0.074	-40	0.195	4	0.978	50	0.372
-85	0.091	-39	0.168	5	0.966	51	0.381
-84	0.109	-38	0.140	6	0.951	52	0.388
-83	0.126	-37	0.111	7	0.934	53	0.394
-82	0.142	-36	0.080	8	0.914	54	0.399
-81	0.159	-35	0.048	9	0.892	55	0.402
-80	0.175	-34	0.014	10	0.868	56	0.404
-79	0.191	-33	0.021	11	0.842	57	0.404
-78	0.207	-32	0.056	12	0.813	58	0.404
-77	0.222	-31	0.093	13	0.783	59	0.402
-76	0.237	-30	0.131	14	0.751	60	0.399
-75	0.252	-29	0.170	15	0.718	61	0.395
-74	0.266	-28	0.209	16	0.683	62	0.390
-73	0.280	-27	0.249	17	0.646	63	0.384
-72	0.293	-26	0.289	18	0.609	64	0.377
-71	0.306	-25	0.330	19	0.571	65	0.369
-70	0.318	-24	0.370	20	0.532	66	0.360
-69	0.329	-23	0.411	21	0.492	67	0.350
-68	0.340	-22	0.452	22	0.452	68	0.340
-67	0.350	-21	0.492	23	0.411	69	0.329
-66	0.360	-20	0.532	24	0.370	70	0.318
-65	0.369	-19	0.571	25	0.330	71	0.306
-64	0.377	-18	0.609	26	0.289	72	0.293
-63	0.384	-17	0.646	27	0.249	73	0.280
-62	0.390	-16	0.683	28	0.209	74	0.266
-61	0.395	-15	0.718	29	0.170	75	0.252
-60	0.399	-14	0.751	30	0.131	76	0.237
-59	0.402	-13	0.783	31	0.093	77	0.222
-58	0.404	-12	0.813	32	0.056	78	0.207
-57	0.404	-11	0.842	33	0.021	79	0.191
-56	0.404	-10	0.868	34	0.014	80	0.175
-55	0.402	-9	0.892	35	0.048	81	0.159
-54	0.399	-8	0.914	36	0.080	82	0.142
-53	0.394	-7	0.934	37	0.111	83	0.126
-52	0.388	-6	0.951	38	0.140	84	0.109
-51	0.381	-5	0.966	39	0.168	85	0.091
-50	0.372	-4	0.978	40	0.195	86	0.074
-49	0.361	-3	0.988	41	0.220	87	0.056
-48	0.349	-2	0.995	42	0.243	88	0.038
-47	0.336	-1	0.999	43	0.265	89	0.020
-46	0.320	0	1.000	44	0.285	90	0.000
-45	0.303			45	0.303		

S.O. 30760 Figure 4

VALIDATION OF TOTAL POWER GAIN CALCULATION

WLFH Claxton, GA

6025-3-2/2/2/2-Spec.-DA

Elevation Gain of Antenna 2.239

V RMS 0.562

Vertical Azimuth Gain equals $1/(RMS)^2$ 3.166

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

Total Vertical Power Gain **7.089**

==========

ERP divided by Vertical Power Gain equals Antenna Input Power

45.0 kW ERP Divided by V Gain 7.089 Equals **6.348** kW Antenna Input Power

6.348 kW **X** Horizontal gain (0.19) = 1.20 kW