

EXHIBIT #9

SPECIAL OPERATING CONDITIONS

Wichita State University
License to Cover Construction Permit
KMUW
BPED-20070110ABX
Wichita, Kansas

May 2008

CH 206C1

100 kW H + V DA

The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit.

1. Proof of Performance – Attachment A is the antenna proof of performance provided by Shively Labs, the manufacturer of the installed Shively 6810-8-DA antenna. This proof of performance has been reviewed. The as-built, composite pattern was found to be in compliance with the Commission's Rules on RMS. The as-built RMS is 0.832 and the theoretical RMS is 0.971. The as-built RMS is 85.6% of the theoretical. All points of the as-built pattern are within the corresponding points of the theoretical.
2. Affidavit from licensed surveyor – The affidavit is included as Attachment B.
3. Affidavit from overseer of antenna installation. – Attachment C is a statement by Jon Cyphers, the engineer who supervised the antenna installation.
4. See Attachment A.
5. Wichita State University will coordinate with other users of the site to protect workers on the tower by either reducing ERP or terminating transmission.

S.O. 25804

Report of Test 6810-8R-DA

for

WICHITA STATE UNIVERSITY

KMUW 89.1 MHz WICHITA, KS

OBJECTIVE:

The objective of this test was to demonstrate the directional characteristics of a 6810-8R-DA to meet the needs of KMUW and to comply with the requirements of the FCC construction permit, file number BPED-20070110ABX.

RESULTS:

The measured azimuth pattern for the 6810-8R-DA is shown in Figure 1. Figure 1A shows the Tabulation of the Horizontal Polarization. Figure 1B shows the Tabulation of the Vertical Polarization. Figure 1C shows the Tabulation of the FCC Composite Pattern. The calculated elevation pattern of the antenna is shown in Figure 3. Construction permit file number BPED-20070110ABX indicates that the Horizontal radiation component shall not exceed 100 kW at any azimuth and is restricted to the following values at the azimuths specified:

130 Degrees T: 86 kW

320 Degrees T: 49 kW

From Figure 1, the maximum radiation of the Horizontal component occurs at 069 Degrees T to 076 Degrees T. At the restricted azimuth of 130 Degrees T the Vertical component is 0.77 dB down from the maximum of 100 kW, or 84 kW. At the restricted azimuth of 320 Degrees T the Horizontal component is 6.29 dB down from the maximum of 100 kW, or 24 kW.

The R.M.S. of the Horizontal component is 0.775. The total Horizontal power gain is 7.992. The R.M.S. of the Vertical component is 0.733. The total Vertical power gain is 6.838. See Figure 4 for calculations. The R.M.S. of the FCC composite pattern is 0.971. The R.M.S. of the measured composite pattern is 0.832. Eighty-five percent (85%) of the original authorized FCC composite pattern is 0.825. Therefore this pattern complies with the FCC requirement of 73.316(c)(2)(ix)(A).

METHOD OF DIRECTIONALIZATION:

One bay of the 6810-8R-DA was mounted on a tower of precise scale to the Central GT-1150 tower at the KMUW site. The spacing of the antenna to the tower was varied and vertical parasitic elements were attached to the interbay feedline 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 BPED-20070110ABX, a single level of the 6810-8R-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 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

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 400.95 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:

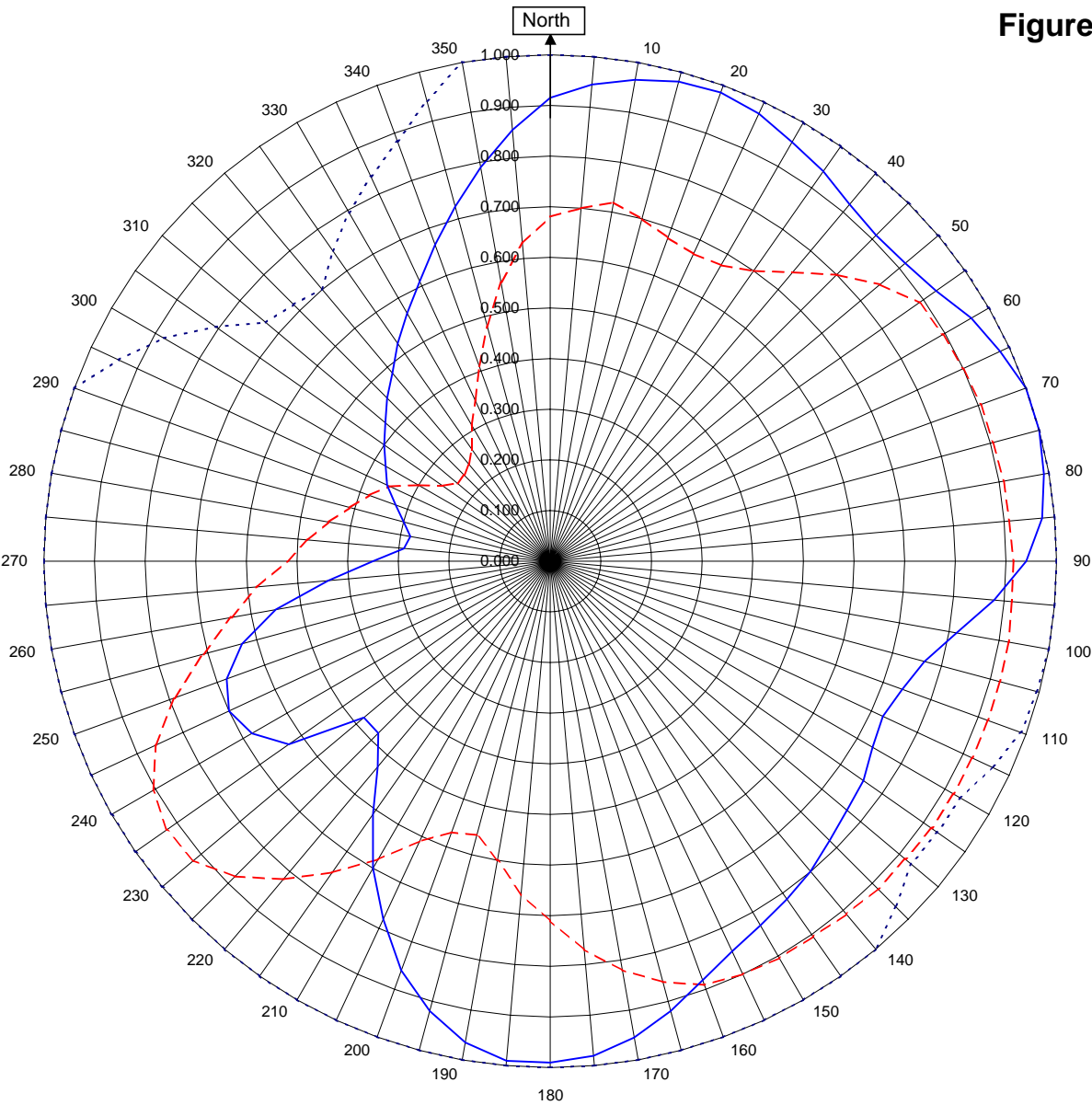


Robert A. Surette
Director of Sales Engineering
S/O 25804
August 6, 2007

Shively Labs

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

Figure 1



KMUW Wichita, KS

25804
August 6, 2007

Horizontal RMS	0.775	Frequency	89.1 / 400.95 MHz
Vertical RMS	0.733	Plot	Relative Field
H/V Composite RMS	0.832	Scale	4.5 : 1
FCC Composite RMS	0.971	See Figure 2 for Mechanical Details	

Antenna Model	6810-8R-DA
Pattern Type	Directional Azimuth

Figure 1a

Tabulation of Horizontal Azimuth Pattern
 KMWU Wichita, KS

Azimuth	Rel Field	Azimuth	Rel Field
0	0.915	180	0.990
10	0.965	190	0.965
20	0.985	200	0.860
30	0.955	210	0.700
40	0.920	220	0.530
45	0.910	225	0.480
50	0.915	230	0.480
60	0.960	240	0.680
70	1.000	250	0.680
80	0.990	260	0.550
90	0.940	270	0.350
100	0.815	280	0.280
110	0.740	290	0.325
120	0.735	300	0.375
130	0.765	310	0.425
135	0.780	315	0.455
140	0.800	320	0.485
150	0.830	330	0.565
160	0.880	340	0.665
170	0.955	350	0.790

Figure 1b

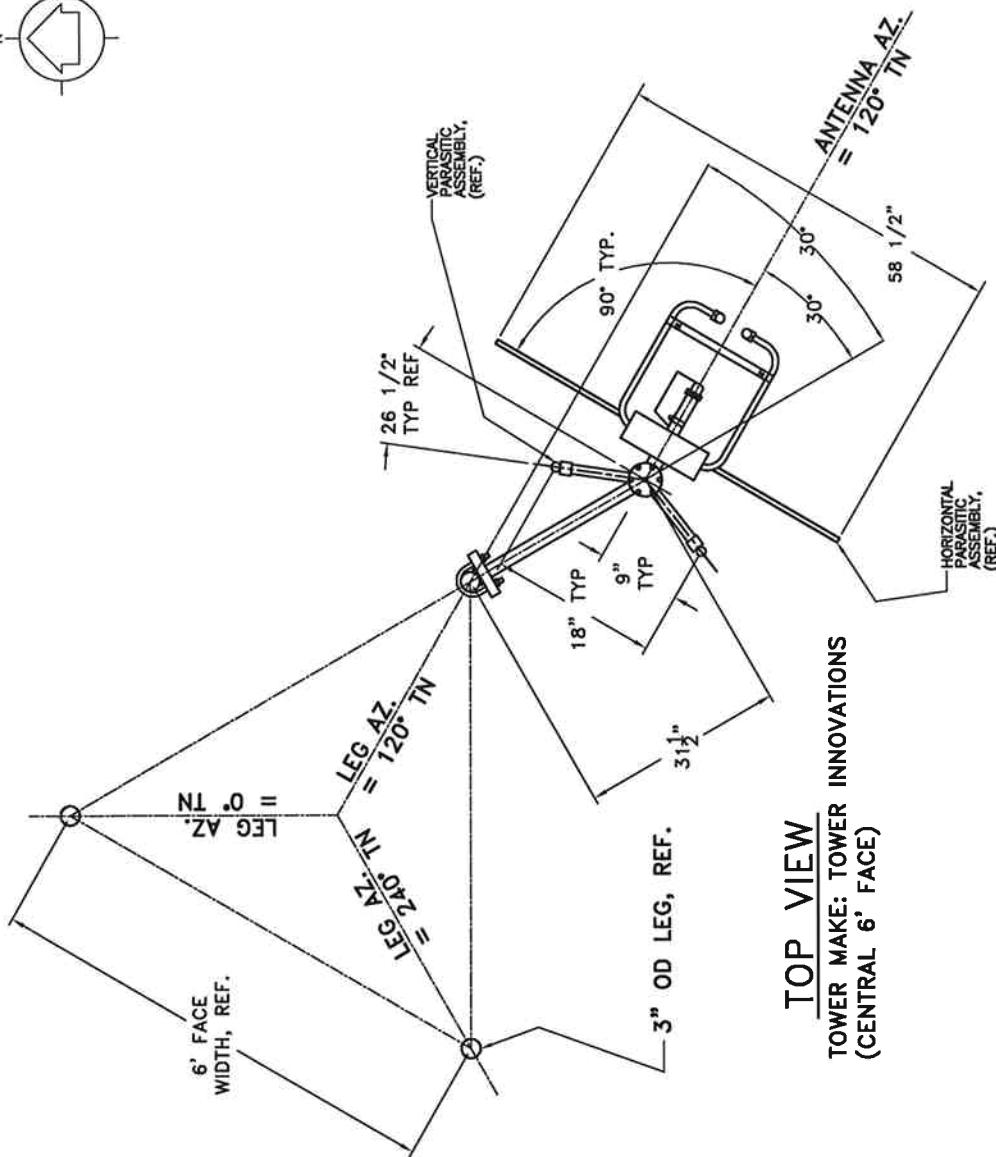
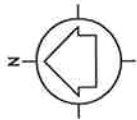
Tabulation of Vertical Azimuth Pattern
KMUW Wichita, KS

Azimuth	Rel Field	Azimuth	Rel Field
0	0.680	180	0.710
10	0.720	190	0.600
20	0.680	200	0.570
30	0.675	210	0.680
40	0.745	220	0.820
45	0.800	225	0.880
50	0.850	230	0.920
60	0.895	240	0.905
70	0.905	250	0.790
80	0.910	260	0.640
90	0.915	270	0.520
100	0.920	280	0.445
110	0.920	290	0.380
120	0.920	300	0.300
130	0.915	310	0.240
135	0.915	315	0.240
140	0.910	320	0.250
150	0.905	330	0.310
160	0.890	340	0.410
170	0.820	350	0.560

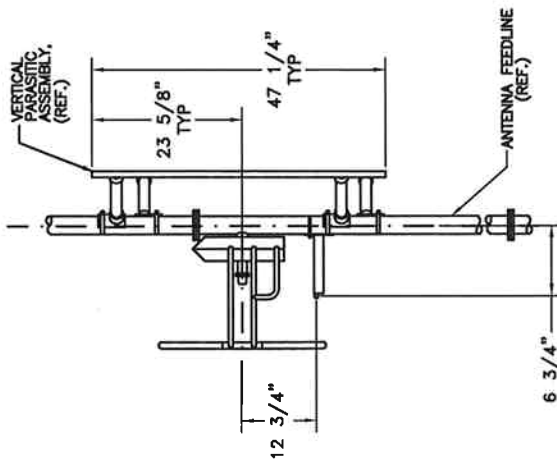
Figure 1c

Tabulation of FCC Directional Composite
KMUW Wichita, KS

Azimuth	Rel Field	Azimuth	Rel Field
0	1.000	180	1.000
10	1.000	190	1.000
20	1.000	200	1.000
30	1.000	210	1.000
40	1.000	220	1.000
50	1.000	230	1.000
60	1.000	240	1.000
70	1.000	250	1.000
80	1.000	260	1.000
90	1.000	270	1.000
100	1.000	280	1.000
110	0.990	290	1.000
120	0.936	300	0.881
130	0.930	310	0.733
140	1.000	320	0.701
150	1.000	330	0.795
160	1.000	340	0.882
170	1.000	350	1.000



TOP VIEW
TOWER MAKE: TOWER INNOVATIONS
(CENTRAL 6' FACE)



SIDE VIEW

SHIVELY LABS

A DIVISION OF HOWELL LABORATORIES INC., BRIDGTON, MAINE

SHOP ORDER:	FREQUENCY:	SCALE:	DRAWN BY:
25804	89.1	N.T.S.	ASP
TITLE:	APPROVED BY:		

MODEL-6810-8R-DIRECTIONAL ANTENNA

DATE:

7/28/07

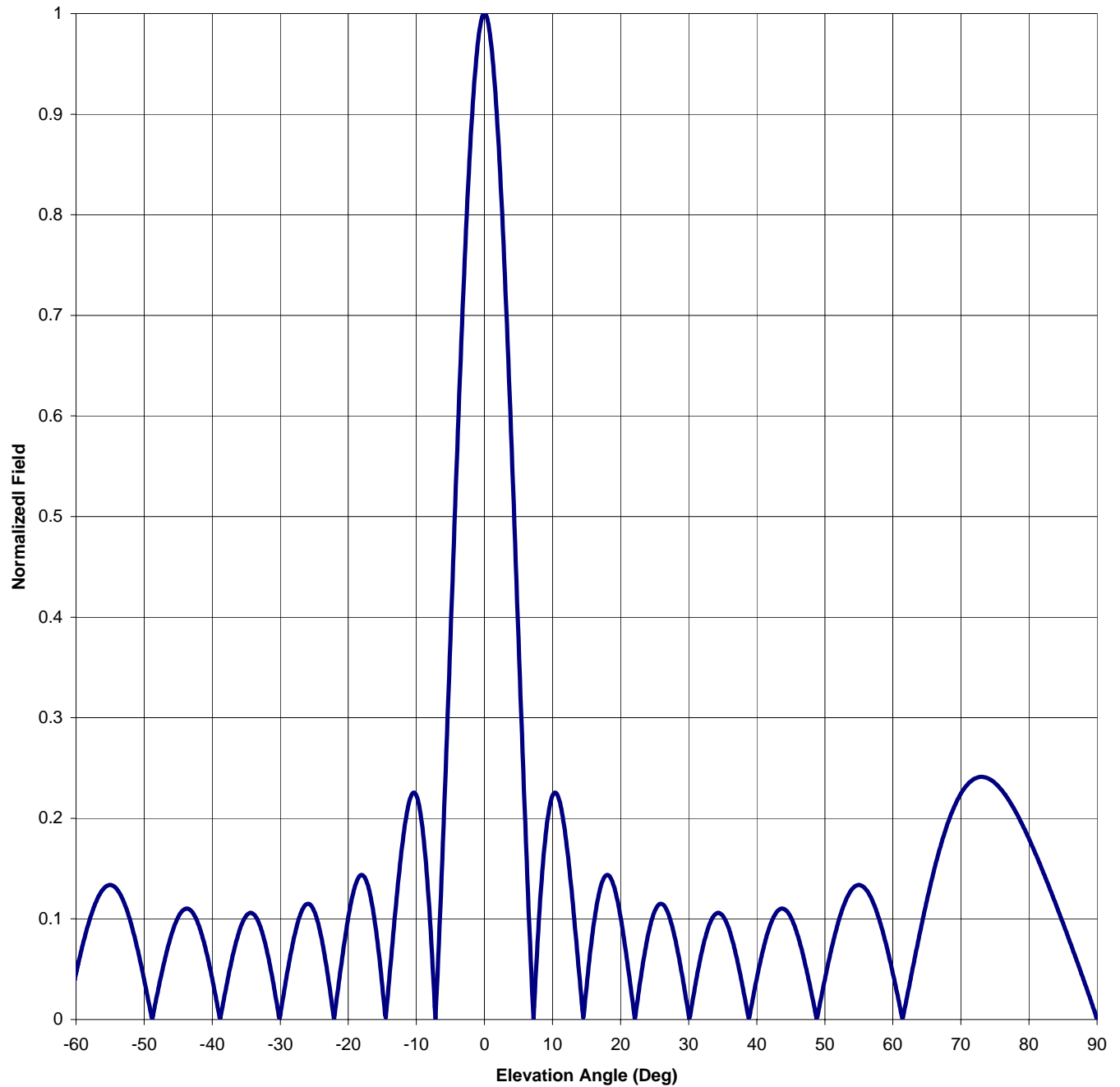
FIGURE 2

ANTENNA HEADING 120° TRUE NORTH

Antenna Mfg.: Shively Labs
Antenna Type: 6810-8R-DA
Station: KMUW
Frequency: 89.1
Channel #: 206
Figure: 3

Date: 8/6/2007

Beam Tilt	0	
Gain (Max)	7.992	9.026 dB
Gain (Horizon)	7.992	9.026 dB



Antenna Mfg.: Shively Labs
 Antenna Type: 6810-8R-DA
 Station: KMWU
 Frequency: 89.1
 Channel #: 206
 Figure: 3

Date: 8/6/2007

Beam Tilt 0
 Gain (Max) 7.992
 Gain (Horizon) 7.992

9.026 dB
 9.026 dB

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	0.110	0	1.000	46	0.084
-89	0.020	-43	0.107	1	0.969	47	0.058
-88	0.040	-42	0.094	2	0.879	48	0.028
-87	0.059	-41	0.071	3	0.740	49	0.006
-86	0.077	-40	0.041	4	0.567	50	0.040
-85	0.096	-39	0.006	5	0.378	51	0.071
-84	0.113	-38	0.030	6	0.193	52	0.097
-83	0.131	-37	0.063	7	0.030	53	0.117
-82	0.148	-36	0.088	8	0.099	54	0.130
-81	0.164	-35	0.103	9	0.184	55	0.134
-80	0.180	-34	0.105	10	0.223	56	0.130
-79	0.194	-33	0.094	11	0.218	57	0.118
-78	0.207	-32	0.069	12	0.178	58	0.099
-77	0.218	-31	0.035	13	0.114	59	0.075
-76	0.228	-30	0.005	14	0.039	60	0.046
-75	0.235	-29	0.045	15	0.033	61	0.014
-74	0.240	-28	0.081	16	0.092	62	0.020
-73	0.241	-27	0.105	17	0.130	63	0.054
-72	0.239	-26	0.115	18	0.144	64	0.087
-71	0.234	-25	0.108	19	0.133	65	0.118
-70	0.225	-24	0.083	20	0.102	66	0.147
-69	0.211	-23	0.043	21	0.056	67	0.172
-68	0.194	-22	0.005	22	0.005	68	0.194
-67	0.172	-21	0.056	23	0.043	69	0.211
-66	0.147	-20	0.102	24	0.083	70	0.225
-65	0.118	-19	0.133	25	0.108	71	0.234
-64	0.087	-18	0.144	26	0.115	72	0.239
-63	0.054	-17	0.130	27	0.105	73	0.241
-62	0.020	-16	0.092	28	0.081	74	0.240
-61	0.014	-15	0.033	29	0.045	75	0.235
-60	0.046	-14	0.039	30	0.005	76	0.228
-59	0.075	-13	0.114	31	0.035	77	0.218
-58	0.099	-12	0.178	32	0.069	78	0.207
-57	0.118	-11	0.218	33	0.094	79	0.194
-56	0.130	-10	0.223	34	0.105	80	0.180
-55	0.134	-9	0.184	35	0.103	81	0.164
-54	0.130	-8	0.099	36	0.088	82	0.148
-53	0.117	-7	0.030	37	0.063	83	0.131
-52	0.097	-6	0.193	38	0.030	84	0.113
-51	0.071	-5	0.378	39	0.006	85	0.096
-50	0.040	-4	0.567	40	0.041	86	0.077
-49	0.006	-3	0.740	41	0.071	87	0.059
-48	0.028	-2	0.879	42	0.094	88	0.040
-47	0.058	-1	0.969	43	0.107	89	0.020
-46	0.084	0	1.000	44	0.110	90	0.000
-45	0.102			45	0.102		

VALIDATION OF TOTAL POWER GAIN CALCULATION

KMUW 89.1 MHz WICHITA, KS

MODEL 6810-8R-DA

Elevation Gain of Antenna 4.54

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

H RMS	0.775	V RMS	0.733	H/V Ratio	1.057
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Elevation Gain of Horizontal Component 4.800

Elevation Gain of Vertical Component 4.294

Horizontal Azimuth Gain equals 1/(RMS)SQ. 1.665

Vertical Azimuth Gain equals 1/(RMS/Max Vert)SQ. 1.592

Max. Vertical 0.925

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

Total Horizontal Power Gain = 7.992

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

Total Vertical Power Gain = 6.838

=====

ERP divided by Horizontal Power Gain equals Antenna Input Power

100 KW ERP Equals 12.513 KW Antenna Input Power

Antenna Input Power times Vertical Power Gain equals Vertical ERP

12.513 KW Times 6.838 KW Equals 85.563 KW ERP

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

0.925 Equals 85.563 KW Vertical ERP

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



416 S. MARKET WICHITA, KS 67202
PH 316.262.2262 FAX 316.262.2268
surveyors@benchmarkls.net

State of Kansas

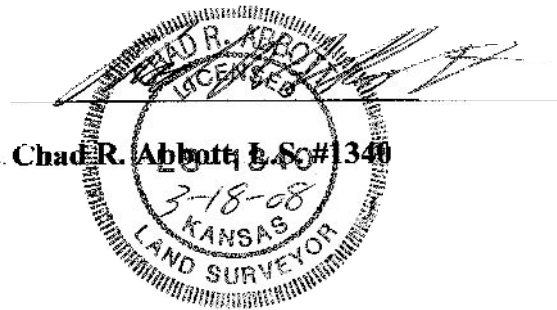
County of Sedgwick

SS

I, Chad R. Abbott, L.S. #1340 do hereby certify that this drawing is a true representation of an azimuth mark set by me or under my direct supervision and that I am a duly licensed Land Surveyor in the State of Kansas.

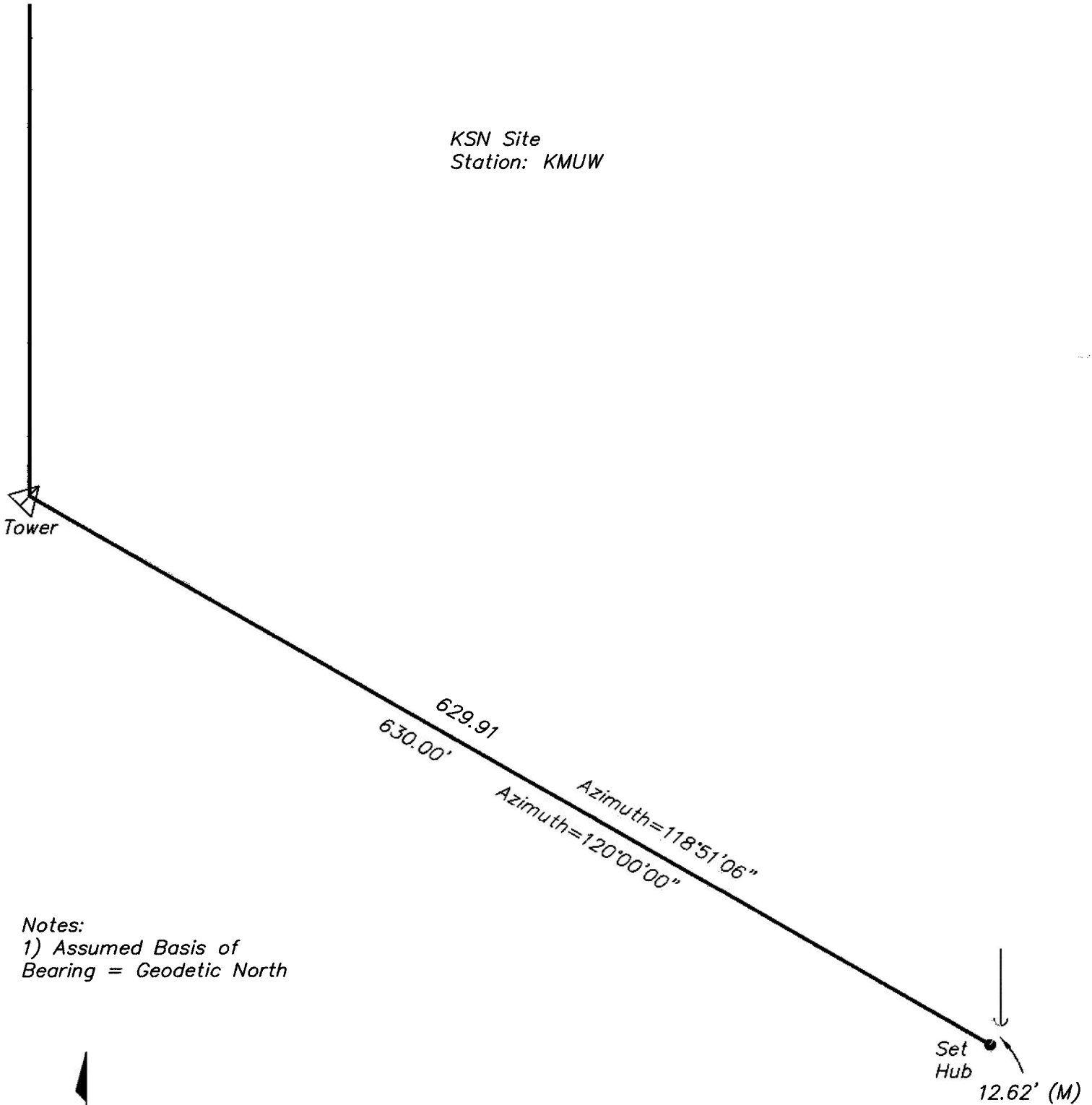
Location: KSN Site – Station KMUW

Date of Survey: February 27, 2008



Chad R. Abbott, L.S. #1340

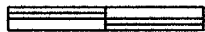
KSN Site
Station: KMWU



Notes:
1) Assumed Basis of
Bearing = Geodetic North



Legend:
(M) = Measured
← Guy Anchor



0 40 80

FILE: C:drawings/misc/9262

Dwn. By: AMB	Aprvd. By: CRA
Dwg. No. 9262	Scale: 1" = 80'



Directional Antenna Installation Certification

May 8, 2008

As Director of Engineering for KMUW-FM, I was responsible for the correct placement of the Shively 6810 8-bay directional antenna. This antenna was placed on the KSN-TV tower near 151st Street West and 53rd Street North in Colwich, Kansas.

The design of the antenna by Shively Labs was based on studies completed by V-Soft Communications, and Shively provided instructions for the mounting and placement of the antenna on the tower. The instructions were followed, and no field modifications were necessary for the installation. The installation was completed by Precision Communications Inc. under my supervision.

Benchmark Land Survey, a surveyor licensed to the State of Kansas, confirmed the azimuth and placement of the antenna once the installation was completed.

I verify that the KMUW directional antenna was installed on the KSN tower in accordance to the instructions provided by Shively Labs.

A handwritten signature in blue ink, appearing to read 'Jon Cyphers', is written over a horizontal line.

Jon Cyphers, CBTE CBRE
Director of Engineering
KMUW-FM
Wichita State University
Wichita, Kansas