

Directional Antenna Parameters

The proposed antenna system will operate with the following parameters:

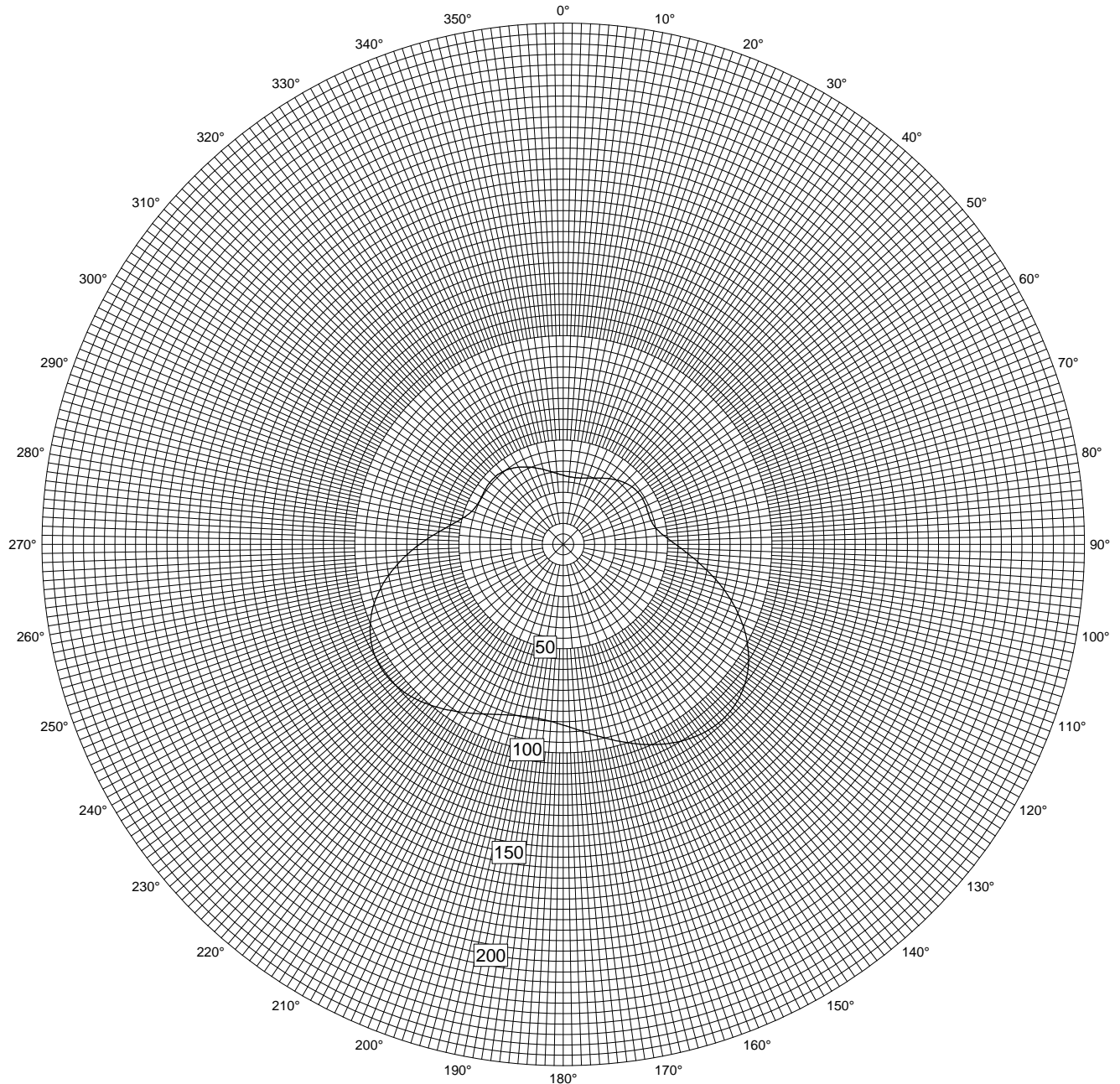
Power in watts:	5 KW Daytime, 0.052 KW Nighttime (DA-2).	
Number of towers:	4 day, 6 night (no change to licensed daytime facility)	
Type of towers:	Vertical, uniform-cross-section base-insulated guyed steel towers	
Height of towers:	#1, #3, #4, #6: 48.16 meters above base insulator (76.9°) #1, #3, #4, #6: 48.8 meters overall height #2 & #5: 35.1 meters above base insulator (52.63°) #2 & #5: 36 meters overall height	
Tower Orientation:	Tower 1, reference (existing #1) Tower 2, 5° true (new) Tower 3, 5° true (existing #2) Tower 4, 100° true (existing #4) Tower 5, 39.1° true (new) Tower 6, 22.5° true (existing #3)	
Tower Spacing:	Tower 1 is reference Tower 2, 93.5° (58.6 meters) Tower 3, 187° (117.2 meters) Tower 4, 60° (37.6 meters) Tower 5, 106.6° (66.8 meters) Tower 6, 195° (122.2 meters)	
Ground System:	120 buried copper radials 56.4 meters in length (90°) around each tower except shortened and bonded to 4 inch copper strap at intersections. Another 4 inch copper strap interconnects tower bases.	
Design Parameters:	<u>Daytime</u>	<u>Nighttime</u>
	#1 : 1.00/ 0°	1.00/ 0°
	#2 : detuned, not used	0.60 /+100°
	#3 : 1.00 / +0°	0.30 /+200°
	#4 : 1.02 /-122.5°	0.50 /-180°
	#5 : detuned, not used	0.30 /-80°
	#6 : 1.00 /-124°	0.15 /+20°
RMS (Theoretical):	<u>Daytime</u>	<u>Nighttime</u>
	635.69 mv/m/km	69.66 mv/m/km
	667.94 mv/m/km	73.89 mv/m/km
	669.70 mv/m/km	n/a
	947.90 mv/m/km	113.45 mv/m/km
	21.47 mv/m/km	10.00 mv/m/km
	471.58 mv/m/km	84.27 mv/m/km
RMS (Standard):		
RMS (Augmented):		
RSS:		
Q Term:		
Pattern Multiplier (K):		

All pattern calculations were made in compliance with 47 CFR 73.15.

Theoretical RMS: 69.66 mv/m/km
Theoretical RSS: 113.45 mv/m/km
Quadrature Term: 10.00 mv/m/km
Multiplier (K): 84.27 mv/m/km
Standard RMS: 73.89 mv/m/km

Mueller Broadcast Design

613 S. La Grange Rd.
La Grange, Illinois 60525
(708) 352-2166



Proposed Standard Pattern

Polnet Communications, Ltd.

Frequency: 1330 KHz Power: 0.052 KW

Nighttime Directional Antenna

Location: Evanston, Illinois

Call Sign: WKTA

42° - 8' - 23" N / 87° - 53' - 9" W

July 06, 2005

Horizontal Plane Radiation Pattern

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WKTA

The antenna input power is 0.052 KW for nighttime operation.

The design variables for this pattern are:

<u>Tower</u>	<u>Azimuth</u>	<u>Spacing</u>	<u>Ratio</u>	<u>Phase</u>	<u>Height</u>	<u>Top Load</u>
1	0.000°	0.000°	1.000	0.000°	76.900°	none
2	5.000°	93.500°	0.600	100.000°	52.630°	none
3	5.000°	187.000°	0.300	200.000°	76.900°	none
4	100.000°	60.000°	0.500	-180.000°	76.900°	none
5	39.100°	106.600°	0.300	-80.000°	52.630°	none
6	22.500°	195.000°	0.150	20.000°	76.900°	none

RMS(Theo.)(One Ohm Loss)= 69.66 mv/m/km

RSS(Theo.)(One Ohm Loss)= 113.45 mv/m/km

K (Pattern Multiplier) = 84.27 mv/m/km

Quadrature Term = 10.00 mv/m/km

RMS(Std.) (One Ohm Loss)= 73.89 mv/m/km

The WKTA 0° vertical elevation pattern at one kilometer is:

<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>
<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>
0°	33.14	90°	53.84	180°	86.63	270°	68.89
5°	32.58	95°	61.12	185°	84.83	275°	61.13
10°	32.50	100°	69.64	190°	84.27	280°	54.48
15°	32.92	105°	78.68	195°	84.99	285°	49.55
20°	33.81	110°	87.53	200°	86.89	290°	46.60
25°	35.11	115°	95.62	205°	89.72	295°	45.39
30°	36.70	120°	102.48	210°	93.16	300°	45.34
35°	38.46	125°	107.79	215°	96.82	305°	45.75
40°	40.20	130°	111.38	220°	100.29	310°	46.08
45°	41.76	135°	113.21	225°	103.16	315°	46.00
50°	42.97	140°	113.35	230°	105.06	320°	45.39
55°	43.69	145°	112.00	235°	105.67	325°	44.27
60°	43.89	150°	109.40	240°	104.75	330°	42.73
65°	43.68	155°	105.87	245°	102.16	335°	40.94
70°	43.40	160°	101.76	250°	97.90	340°	39.05
75°	43.61	165°	97.41	255°	92.08	345°	37.20
80°	45.07	170°	93.21	260°	84.99	350°	35.53
85°	48.40	175°	89.51	265°	77.07	355°	34.15

Pattern date: July 06, 2005

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The WKTA 5° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	32.97	90°	53.48	180°	86.15	270°	68.38
5°	32.42	95°	60.69	185°	84.37	275°	60.70
10°	32.34	100°	69.12	190°	83.82	280°	54.12
15°	32.76	105°	78.05	195°	84.53	285°	49.23
20°	33.64	110°	86.81	200°	86.39	290°	46.27
25°	34.91	115°	94.81	205°	89.17	295°	45.05
30°	36.48	120°	101.60	210°	92.55	300°	44.97
35°	38.20	125°	106.86	215°	96.15	305°	45.37
40°	39.92	130°	110.43	220°	99.55	310°	45.69
45°	41.44	135°	112.26	225°	102.37	315°	45.61
50°	42.62	140°	112.42	230°	104.22	320°	45.02
55°	43.32	145°	111.11	235°	104.80	325°	43.92
60°	43.51	150°	108.57	240°	103.87	330°	42.42
65°	43.31	155°	105.10	245°	101.30	335°	40.66
70°	43.05	160°	101.05	250°	97.06	340°	38.79
75°	43.29	165°	96.78	255°	91.30	345°	36.98
80°	44.76	170°	92.64	260°	84.30	350°	35.33
85°	48.08	175°	88.99	265°	76.47	355°	33.97

The WKTA 10° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	32.47	90°	52.42	180°	84.72	270°	66.86
5°	31.94	95°	59.42	185°	83.01	275°	59.43
10°	31.87	100°	67.58	190°	82.48	280°	53.04
15°	32.27	105°	76.21	195°	83.14	285°	48.26
20°	33.11	110°	84.67	200°	84.91	290°	45.32
25°	34.32	115°	92.41	205°	87.55	295°	44.04
30°	35.81	120°	99.00	210°	90.76	300°	43.89
35°	37.44	125°	104.12	215°	94.17	305°	44.23
40°	39.06	130°	107.62	220°	97.38	310°	44.52
45°	40.50	135°	109.44	225°	100.02	315°	44.46
50°	41.59	140°	109.68	230°	101.74	320°	43.91
55°	42.24	145°	108.48	235°	102.23	325°	42.89
60°	42.41	150°	106.09	240°	101.27	330°	41.47
65°	42.23	155°	102.81	245°	98.73	335°	39.81
70°	42.01	160°	98.96	250°	94.60	340°	38.04
75°	42.32	165°	94.88	255°	89.02	345°	36.30
80°	43.84	170°	90.93	260°	82.24	350°	34.73
85°	47.14	175°	87.44	265°	74.67	355°	33.42

Pattern date: July 06, 2005

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The WKTA 15° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	31.64	90°	50.69	180°	82.35	270°	64.39
5°	31.15	95°	57.36	185°	80.76	275°	57.36
10°	31.08	100°	65.07	190°	80.25	280°	51.29
15°	31.45	105°	73.22	195°	80.85	285°	46.68
20°	32.22	110°	81.22	200°	82.46	290°	43.77
25°	33.34	115°	88.54	205°	84.88	295°	42.42
30°	34.71	120°	94.79	210°	87.81	300°	42.16
35°	36.19	125°	99.69	215°	90.92	305°	42.40
40°	37.66	130°	103.07	220°	93.84	310°	42.65
45°	38.95	135°	104.89	225°	96.21	315°	42.60
50°	39.92	140°	105.21	230°	97.71	320°	42.12
55°	40.49	145°	104.20	235°	98.06	325°	41.21
60°	40.63	150°	102.06	240°	97.06	330°	39.93
65°	40.48	155°	99.07	245°	94.58	335°	38.41
70°	40.36	160°	95.53	250°	90.63	340°	36.79
75°	40.78	165°	91.77	255°	85.32	345°	35.19
80°	42.36	170°	88.11	260°	78.90	350°	33.73
85°	45.61	175°	84.88	265°	71.76	355°	32.52

The WKTA 20° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	30.47	90°	48.36	180°	79.07	270°	61.07
5°	30.03	95°	54.57	185°	77.63	275°	54.58
10°	29.97	100°	61.70	190°	77.15	280°	48.92
15°	30.29	105°	69.22	195°	77.66	285°	44.55
20°	30.98	110°	76.60	200°	79.07	290°	41.70
25°	31.97	115°	83.37	205°	81.20	295°	40.27
30°	33.18	120°	89.18	210°	83.78	300°	39.86
35°	34.48	125°	93.76	215°	86.50	305°	39.97
40°	35.76	130°	96.98	220°	89.04	310°	40.16
45°	36.86	135°	98.78	225°	91.07	315°	40.12
50°	37.68	140°	99.22	230°	92.29	320°	39.72
55°	38.15	145°	98.43	235°	92.47	325°	38.95
60°	38.27	150°	96.61	240°	91.41	330°	37.84
65°	38.17	155°	93.99	245°	89.03	335°	36.51
70°	38.17	160°	90.86	250°	85.31	340°	35.08
75°	38.72	165°	87.52	255°	80.38	345°	33.66
80°	40.37	170°	84.25	260°	74.45	350°	32.36
85°	43.55	175°	81.34	265°	67.86	355°	31.27

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The WKTA 25° vertical elevation pattern at one kilometer is:

<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>
<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>
0°	28.98	90°	45.50	180°	74.91	270°	57.02
5°	28.59	95°	51.15	185°	73.65	275°	51.17
10°	28.54	100°	57.59	190°	73.22	280°	46.01
15°	28.82	105°	64.36	195°	73.63	285°	41.95
20°	29.40	110°	71.00	200°	74.81	290°	39.20
25°	30.24	115°	77.11	205°	76.60	295°	37.69
30°	31.26	120°	82.39	210°	78.77	300°	37.12
35°	32.35	125°	86.60	215°	81.04	305°	37.08
40°	33.40	130°	89.60	220°	83.14	310°	37.17
45°	34.31	135°	91.36	225°	84.77	315°	37.13
50°	34.97	140°	91.92	230°	85.69	320°	36.82
55°	35.34	145°	91.38	235°	85.68	325°	36.19
60°	35.44	150°	89.92	240°	84.58	330°	35.27
65°	35.42	155°	87.74	245°	82.32	335°	34.16
70°	35.55	160°	85.09	250°	78.89	340°	32.95
75°	36.25	165°	82.22	255°	74.40	345°	31.73
80°	37.97	170°	79.40	260°	69.05	350°	30.61
85°	41.03	175°	76.89	265°	63.13	355°	29.67

The WKTA 30° vertical elevation pattern at one kilometer is:

<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>	<u>BEARING</u>	<u>F.I.</u>
<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>	<u>DEG.T</u>	<u>MV/M</u>
0°	27.17	90°	42.19	180°	69.96	270°	52.40
5°	26.85	95°	47.23	185°	68.89	275°	47.25
10°	26.80	100°	52.90	190°	68.50	280°	42.66
15°	27.02	105°	58.84	195°	68.80	285°	38.97
20°	27.49	110°	64.66	200°	69.74	290°	36.35
25°	28.17	115°	70.04	205°	71.17	295°	34.78
30°	28.99	120°	74.72	210°	72.90	300°	34.06
35°	29.86	125°	78.49	215°	74.70	305°	33.85
40°	30.68	130°	81.25	220°	76.33	310°	33.84
45°	31.38	135°	82.94	225°	77.55	315°	33.78
50°	31.89	140°	83.61	230°	78.16	320°	33.53
55°	32.17	145°	83.32	235°	77.96	325°	33.03
60°	32.28	150°	82.23	240°	76.84	330°	32.32
65°	32.35	155°	80.52	245°	74.73	335°	31.43
70°	32.64	160°	78.37	250°	71.64	340°	30.44
75°	33.49	165°	76.02	255°	67.65	345°	29.45
80°	35.24	170°	73.70	260°	62.94	350°	28.53
85°	38.13	175°	71.61	265°	57.75	355°	27.75

Pattern date: July 06, 2005

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The WKTA 35° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	25.07	90°	38.55	180°	64.28	270°	47.36
5°	24.81	95°	42.92	185°	63.41	275°	42.94
10°	24.76	100°	47.78	190°	63.07	280°	38.96
15°	24.93	105°	52.85	195°	63.28	285°	35.68
20°	25.29	110°	57.82	200°	63.97	290°	33.25
25°	25.81	115°	62.43	205°	65.03	295°	31.67
30°	26.42	120°	66.47	210°	66.33	300°	30.82
35°	27.07	125°	69.78	215°	67.66	305°	30.45
40°	27.69	130°	72.25	220°	68.83	310°	30.31
45°	28.20	135°	73.84	225°	69.66	315°	30.20
50°	28.57	140°	74.58	230°	69.97	320°	29.99
55°	28.80	145°	74.54	235°	69.61	325°	29.62
60°	28.94	150°	73.81	240°	68.49	330°	29.08
65°	29.12	155°	72.55	245°	66.56	335°	28.40
70°	29.56	160°	70.91	250°	63.84	340°	27.64
75°	30.53	165°	69.09	255°	60.38	345°	26.87
80°	32.27	170°	67.26	260°	56.35	350°	26.14
85°	34.95	175°	65.60	265°	51.92	355°	25.53

The WKTA 40° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	22.71	90°	34.68	180°	58.01	270°	42.06
5°	22.51	95°	38.36	185°	57.33	275°	38.39
10°	22.47	100°	42.41	190°	57.05	280°	35.03
15°	22.58	105°	46.61	195°	57.15	285°	32.19
20°	22.84	110°	50.73	200°	57.62	290°	29.99
25°	23.20	115°	54.57	205°	58.35	295°	28.46
30°	23.64	120°	57.96	210°	59.24	300°	27.51
35°	24.10	125°	60.78	215°	60.14	305°	27.00
40°	24.53	130°	62.94	220°	60.89	310°	26.74
45°	24.89	135°	64.40	225°	61.36	315°	26.57
50°	25.17	140°	65.19	230°	61.41	320°	26.37
55°	25.37	145°	65.34	235°	60.93	325°	26.08
60°	25.56	150°	64.94	240°	59.84	330°	25.68
65°	25.86	155°	64.09	245°	58.13	335°	25.19
70°	26.43	160°	62.94	250°	55.78	340°	24.63
75°	27.47	165°	61.61	255°	52.87	345°	24.06
80°	29.15	170°	60.25	260°	49.51	350°	23.52
85°	31.56	175°	59.01	265°	45.84	355°	23.06

Pattern date: July 06, 2005

Mueller Broadcast Design

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The WKTA 45° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	20.17	90°	30.67	180°	51.28	270°	36.68
5°	20.02	95°	33.68	185°	50.78	275°	33.71
10°	19.98	100°	36.96	190°	50.55	280°	30.97
15°	20.05	105°	40.33	195°	50.58	285°	28.59
20°	20.21	110°	43.63	200°	50.85	290°	26.66
25°	20.45	115°	46.73	205°	51.30	295°	25.23
30°	20.74	120°	49.49	210°	51.83	300°	24.25
35°	21.05	125°	51.81	215°	52.36	305°	23.64
40°	21.34	130°	53.64	220°	52.76	310°	23.26
45°	21.59	135°	54.95	225°	52.93	315°	23.01
50°	21.81	140°	55.74	230°	52.77	320°	22.80
55°	22.02	145°	56.04	235°	52.21	325°	22.56
60°	22.28	150°	55.90	240°	51.20	330°	22.26
65°	22.67	155°	55.42	245°	49.71	335°	21.91
70°	23.34	160°	54.68	250°	47.75	340°	21.52
75°	24.40	165°	53.80	255°	45.37	345°	21.12
80°	25.96	170°	52.87	260°	42.65	350°	20.74
85°	28.07	175°	52.00	265°	39.71	355°	20.42

The WKTA 50° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	17.52	90°	26.64	180°	44.28	270°	31.35
5°	17.41	95°	29.01	185°	43.93	275°	29.04
10°	17.38	100°	31.56	190°	43.75	280°	26.88
15°	17.41	105°	34.17	195°	43.72	285°	24.95
20°	17.51	110°	36.73	200°	43.84	290°	23.33
25°	17.66	115°	39.14	205°	44.05	295°	22.05
30°	17.84	120°	41.30	210°	44.31	300°	21.10
35°	18.03	125°	43.16	215°	44.54	305°	20.43
40°	18.23	130°	44.67	220°	44.67	310°	19.98
45°	18.43	135°	45.79	225°	44.61	315°	19.66
50°	18.63	140°	46.54	230°	44.32	320°	19.42
55°	18.86	145°	46.92	235°	43.74	325°	19.19
60°	19.18	150°	46.99	240°	42.82	330°	18.96
65°	19.65	155°	46.80	245°	41.57	335°	18.70
70°	20.36	160°	46.40	250°	39.99	340°	18.43
75°	21.38	165°	45.88	255°	38.10	345°	18.16
80°	22.77	170°	45.30	260°	35.98	350°	17.91
85°	24.53	175°	44.75	265°	33.70	355°	17.69

Pattern date: July 06, 2005

Mueller Broadcast Design

613 S. La Grange Rd.
La Grange, Illinois 60525
(708) 352-2166

The WKTA 55° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	14.87	90°	22.66	180°	37.18	270°	26.22
5°	14.80	95°	24.46	185°	36.96	275°	24.49
10°	14.77	100°	26.37	190°	36.82	280°	22.85
15°	14.79	105°	28.30	195°	36.76	285°	21.35
20°	14.84	110°	30.20	200°	36.77	290°	20.05
25°	14.93	115°	32.00	205°	36.82	295°	18.97
30°	15.04	120°	33.63	210°	36.88	300°	18.10
35°	15.18	125°	35.06	215°	36.90	305°	17.45
40°	15.33	130°	36.25	220°	36.84	310°	16.96
45°	15.50	135°	37.17	225°	36.65	315°	16.60
50°	15.71	140°	37.84	230°	36.29	320°	16.32
55°	15.98	145°	38.26	235°	35.72	325°	16.08
60°	16.34	150°	38.46	240°	34.94	330°	15.88
65°	16.84	155°	38.46	245°	33.92	335°	15.68
70°	17.54	160°	38.32	250°	32.69	340°	15.49
75°	18.46	165°	38.07	255°	31.26	345°	15.30
80°	19.62	170°	37.77	260°	29.66	350°	15.13
85°	21.03	175°	37.46	265°	27.97	355°	14.99

The WKTA 60° vertical elevation pattern at one kilometer is:

BEARING	F.I.	BEARING	F.I.	BEARING	F.I.	BEARING	F.I.
DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M	DEG.T	MV/M
0°	12.36	90°	18.83	180°	30.20	270°	21.38
5°	12.31	95°	20.12	185°	30.08	275°	20.15
10°	12.29	100°	21.47	190°	29.98	280°	18.96
15°	12.29	105°	22.84	195°	29.91	285°	17.86
20°	12.33	110°	24.18	200°	29.85	290°	16.86
25°	12.39	115°	25.46	205°	29.80	295°	16.00
30°	12.47	120°	26.63	210°	29.74	300°	15.28
35°	12.58	125°	27.68	215°	29.64	305°	14.69
40°	12.71	130°	28.57	220°	29.47	310°	14.22
45°	12.89	135°	29.30	225°	29.21	315°	13.85
50°	13.11	140°	29.86	230°	28.85	320°	13.55
55°	13.39	145°	30.26	235°	28.35	325°	13.31
60°	13.76	150°	30.51	240°	27.71	330°	13.11
65°	14.25	155°	30.64	245°	26.92	335°	12.94
70°	14.87	160°	30.65	250°	26.00	340°	12.78
75°	15.64	165°	30.59	255°	24.96	345°	12.65
80°	16.56	170°	30.48	260°	23.82	350°	12.53
85°	17.63	175°	30.34	265°	22.62	355°	12.43

Pattern date: July 06, 2005