



*William E. McBride  
Wireless Consultant  
PO Box 6065  
Martinsburg, WV 25402  
304-264-5941  
www.amcoordination.com*

**ENGINEERING EXHIBIT**

**EFFECT OF THE**

**MODIFICATION OF AN EXISTING TOWER**

**ON THE OPERATION OF**

**RADIO STATION WDDZ**

**PITTSBURGH, PENNSYLVANIA**

**(Radio Power Inc. W261AX @ ATC Baldwin PA # 88185)**

**EXHIBIT B1**  
**APPLICATION FOR STATION LICENSE**  
**RADIO POWER, INC.**  
**W261AX FM TRANSLATOR**  
**CH 261D -100.1 MHZ - 0.099 KW**  
**PITTSBURGH, PENNSYLVANIA**  
**July 2012**

**July 24, 2012**



**ATC Baldwin PA # 88185**

## **INTRODUCTION**

This engineering report is written on behalf of Radio Power Inc., W261AX, to demonstrate its compliance with the policy of the Federal Communications Commission (FCC) as published on August 11, 1987, and codified in Section 73.154 of the Rules and Regulations. The rule requires that any tower constructed or modified in the vicinity of 0.80 kilometers of an AM non-directional broadcast station, or 3.20 kilometers of a directional broadcast station, that the construction or modification must be coordinated with any AM broadcast stations within this distance. Additionally, the report fulfills the special operating conditions or restrictions (1) of Construction Permit BPFT-20120207ANS. This report is written in reference to the modification of an existing tower by W261AX. The tower is owned by American Tower Corporation (ATC) and is located at North Latitude 40° 23' 48.80", West Longitude 79° 57' 32.30", or 0.25 kilometers at a bearing of 98.38 degrees from Radio Station WDDZ, Pittsburgh, Pennsylvania. The site name / number is Radio Power Inc., W261AX, @ATC Baldwin PA # 88185.

WDDZ is licensed to Pittsburgh, Pennsylvania. The station operates on operates on 1250 kilohertz with a daytime transmitter output power of 5.00 kilowatts, non-directional, and a nighttime transmitter output power of 5.00 kilowatts, directional.

W261AX has modified a long term existing 350.0-foot (106.71-meter) tower at this location by adding a 7/8-inch coax cable and FM translator antenna. The tower is 160.16 electrical degrees at the WDDZ frequency of 1250 kilohertz. The calculated re-radiation based on the height and bearing of the structure is approximately 20.37-percent of the minimum directional antenna field strength for the nighttime pattern. Figure 1 in this report is the WDDZ directional antenna pattern with the distance, bearing, and relative field strength shown used for this calculation. It is normally recommended that the calculated re-radiation above 10.0-percent of the minimum antenna directional field strength should be detuned. This tower is detuned.

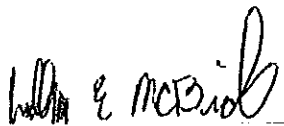
## **PRE AND POST-CONSTRUCTION FIELD STRENGTH MEASUREMENTS**

Pre- and post-construction partial-proof field strength measurements were completed for WDDZ. Approximately eight (8) measurements were taken on each of the three licensed monitor point radials plus one additional radial. Tables 1 to 4 show the results of those measurements. Figures 6 to 19 are Street Atlas maps showing the locations of the measurements. Locations were plotted by distance and bearing taken from a 1992 Partial Proof of Performance, included in this report as Figures 2 to 5. It should be noted that in numerous cases the distance and bearings were locations not located on roads; therefore the closest adjacent location was selected as the measurement location. One case in particular was the 264.5-degree monitor point, which would appear very low. The pre-and post-construction measurements demonstrated virtually no

change. After completion of the measurements and a discussion with the chief engineer of WDDZ, the location was determined to be erroneous, but that monitor points had been checked recently and were all within FCC maximum limits. Pre- and post-construction field strength measurements were within the range of repeatability of field strength measurements with only minor changes. No adjustments were required on the detuning apparatus of the ATC tower.

## CONCLUSION

Radio Power Inc., W261AX, modified an existing tower owned by American Tower Corporation. Pre- and post-construction partial-proof field strength measurements were completed for WDDZ. Approximately eight (8) measurements were taken on each of the three licensed monitor point radials and one additional radial. Tables 1 to 4 show the results of those measurements. Figures 6 to 19 are Street Atlas maps showing the locations of the measurements. Locations were plotted by distance and bearing taken from a 1992 Partial Proof of Performance, included in this report as Figures 2 to 5. Pre- and post-construction field strength measurements were within the range of repeatability of field strength measurements with only minor changes. No adjustments were required on the detuning apparatus of the ATC tower. Therefore, it is concluded that the Radio Power Inc., W261AX, @ ATC Baldwin PA # 88185 has had no impact on the operation of Radio Station WDDZ, Pittsburgh, Pennsylvania.



---

William E. McBride  
Broadcast/Wireless Consultant



**Table 1**

**WDDZ Nighttime 142.5-degree Pre- and Post-Construction Measurements**

Radial / Pt. #	Day	Night	1997 Partial	Date	Time	Pre (mV/m)	Date	Time	Post (mV/m)	Ratio
8		X	56.0	04/20/2012	1347	49.0	07/23/2012	1352	51.0	1.040
9		X	50.0	"	--	NM	"		---	--
10		X	34.0	"	1332	35.0	"	1345	35.5	1.014
11		X	38.0	"	1155	45.0	"		47.5	1.055
12		X	44.0	"	1144	36.0	"	1330	37.5	1.041
13		X	14.0	"	1141	13.9	"	1225	14.0	1.007
14		X	12.8	"	--	NM	"		--	--
15		X	10.8	"	1126	9.80	"	1204	9.7	0.989
16		X	8.5	"	1122	8.60	"	1210	8.50	0.988
17		X	4.5	"	1105	3.50	"	1150	3.40	0.971
18		X	1.9	"	1050	2.05	"	1141	2.05	1.000
									<b>Average</b>	<b>1.011</b>

8. N40 21.966, W079 55.825—across street from green plastic / canvas carport (painted)

9. NM

10. N40 21.583 W079 55.458—On Noble Road prior to corner of yellow garage.

12. N40 21.025, W079 54.907—224 Creston Drive center of street

13. N40.20.425, W079 54.294—Lebanon School Road prior to hill and curve in road.

14. NM

15. N40 18.722, W079 52.577—Coursin Road at pull off past the Dead end sign.

16. N40.18.098, W079 51.950—entrance driveway to abandon church next to tree with no trespassing sign.

17 N40 17.481 W079 51.338—Harrison Road

18. N40 16.993 W 079 50.851 --Loved Ale road --no markers available

**Table 2**

**WDDZ Nighttime 190.5-degree Pre- and Post-Construction Measurements**

Radial / Pt. #	Day	Night	1997 Partial	Date	Time	Pre (mV/m)	Date	Time	Post (mV/m)	Ratio
6			110.0	04/20/2012	1410	116.0		1422	114.0	0.982
10			29.0	05/05/2012	1308	33.1		1854	28.1	0.848
11			21.50	"	1316	15.5		1903	15.1	0.974
12			17.50	"	NM	NM			---	--
13			8.0	"	1326	9.8		1914	9.20	0.938
14			11.0	"	1341	6.2		1929	6.20	1.000
15			8.50	"	1402	4.1		1939	4.45	1.085
16			7.10	"	1406	3.25		1944	3.10	0.953
17			4.40	"	1413	1.81		1948	1.82	1.005
18			2.80	"	NM	NM				--
19			3.10		NM	NM				--
									Average	0.973

6. N40 22.852, W079 57.943—3230

10. N40 21.878, W079 58.176-4628 E. Willcock.

11. N40 21.537, W079 58.278-Doyle road house with white picket fence on side. (Across 4847

12. NM

13. N40 20.740, W079 58.460-Whitfield Towers parking lot—edge of parking lot before it extra parking on right

14. N40 19.901, W079 58.605—in cemetery, section 28 near statue.

15. N40 19.166, W079 58.836—entrance to Alpine Sash.

16. N40 18.877, W079 58.950—Wilson Road

17. N40 18.041, W079 59.125—Intersection of Ridge and Wallace.

18. NM

19. NM

**Table 3**

**WDDZ Nighttime 231.5 Pre- and Post-Construction Measurements**

Radial / Pt. #	Day	Night	1997 Partial	Date	Time	Pre (mV/m)	Date	Time	Post (mV/m)	Ratio
7		X	210.0	05/05/2012	1100	170.0	07/23/2012	1437	172.0	1.011
9		X	54.5	"	1127	94.0	"	1453	100.0	1.063
11		X	26.0	"	NM	26.1	"	1504	25.9	0.992
12		X	50.0	"	NM	NM	"		--	--
13		X	34.0	"	NM	NM	"		--	--
15		X	36.0	"	1032	28.1	"	1523	26.9	0.957
15		X	20.0	"	1025	14.1	"	1515	16.1	1.141
16		X	21.0	"	1017	12.2	"	1537	13.2	1.081
17		X	18.50	"	1008	10.1	"	1549	10.8	1.069
18		X	15.50	"	1003	9.40	"	1554	9.80	1.042
19		X	19.0	"	0955	10.2	"	--	11.0	1.078
									<b>Average</b>	<b>1.061</b>

7. N 40 23.187, W079 58.795— 2523 Brownsville Road front of Sullivan automotive (FS varies extensively as you walk up/down sidewalk.

9. End of Horning Avenue.

11. N40 22.219, W080 00.404—3209 W. May street

12. NM

13. NM

14. N40 21.748, W080 01.167-1<sup>st</sup> parking slot on left after entrance to ball field

15. N40 21.475, W080 01.609—across from 1710 Janet Drive.

16. N40 21.290, W080 01.882—On Franklin top of hill by rusty dual fence gate.

17. N40 21.167, W080 02.106—Intersection of Wells and Delyla Dr.

18. N40 20.986, W080 02.418—On Santa Fe Drive by large tree.

19. N40 20.494, W080 03.200—Macy's parking lot on Fort Couch Rd. 8<sup>th</sup> slot in Macy's lot across from Eat & Park.



**Table 4**

**WDDZ Nighttime 264.5-degree Pre- and Post-Construction Measurements**

Radial / Pt. #	Day	Night	1997 Partial	Date	Time	Pre (mV/m)	Date	Time	Post (mV/m)	Ratio
6 MP		X	162.0	05/04/2012	1249	35.0	07/23/2012	1742	39.1	1.117
10		X	96.0	"	1525	45.0	"	1727	45.0	1.000
11		X	67.0	"	1532	47.0	"	1723	49.5	1.053
12		X	46.0	"	1535	28.2	"	1721	29.5	1.046
13		X	51.0	"	1544	28.0	"	1713	28.5	1.017
14		X	31.0	"	NM	NM	"	1713	--	--
15		X	45.0	"	1610	44.0	"	1706	45.0	1.022
16		X	27.0	"	1622	23.1	"	1659	23.1	1.000
17		X	30.0	"	1632	15.5	"	1649	16.1	1.038
18		X	22.0	"	1639	15.3	"	1642	16.7	1.091
19		X	20.5	"	NM	NM	"		--	
									<b>Average</b>	<b>1.173</b>

6-MP—N40 23.723, W079 59.155—across from 104 Agnew Ave.  
 10—N40 23.608, W080 00.118—Bellaire Place by gray mailbox.  
 11. N40 23.632, W080 00.610—intersection of Roswin and Milan.  
 12. N40 23.603, W080 00.760—2400 Alwyn Street.  
 13. N40 23.570, W080 01.315—across 738 Woodbourne Ave.  
 14.  
 15. N40 23.521, W080 01.191—alley way by garage  
 16. N40 23.507, W080 02.390— from 142 Park Avenue  
 17. N40 23.450, W080 02.948-256 Arden  
 18. N40 23.432, W080 03.319—(605) Neuron Street



# Figure 1

## WDDZ Nighttime Directional Antenna Pattern

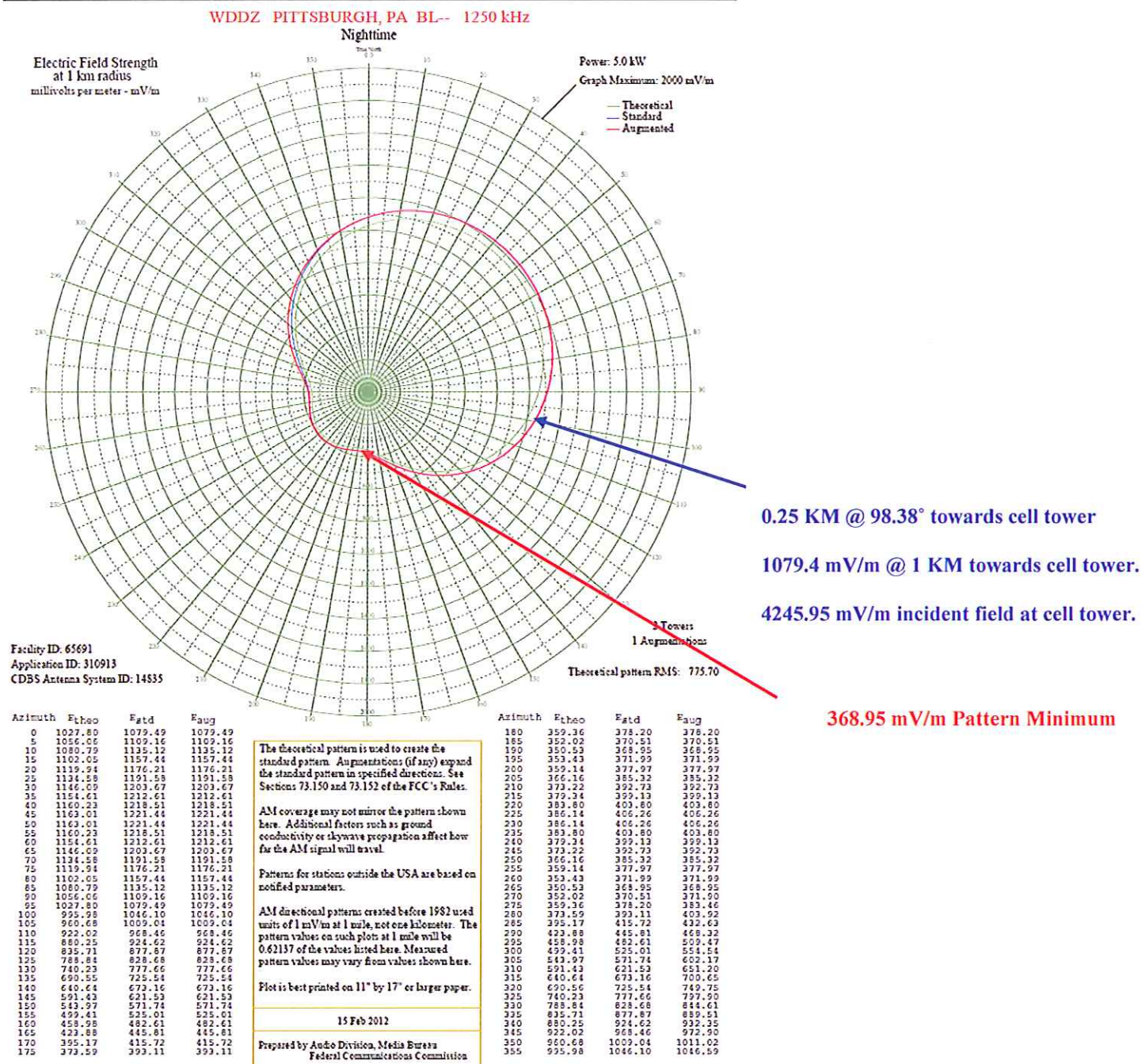


Figure 2

WDDZ 1992 142.5-degree Partial Proof

TABLE 2.3  
NIGHTTIME DIRECTIONAL  
FIELD STRENGTH MEASUREMENTS  
142.50 DEGREE RADIAL  
-----  
THE HEARST CORPORATION  
PITTSBURGH, PA

(1)	(2)	(3)	(4)	(5)
POINT	DISTANCE (mi)	1974 NIGHTTIME FIELD STRENGTH (mV/m)	PRESENT NIGHTTIME FIELD STRENGTH (mV/m)	LOG RATIO (4)/(3)
8	2.71	51.000	56.000 62	0.0406
9	3.12	53.000	44.000 50	-0.0808
10	3.26	59.000	37.000 42	-0.2027
11	3.93	38.000	34.000 37	-0.0483
12	4.07	46.000	42.000 45	-0.0395
13	4.92	18.300	33.000 31	0.2561
14	5.96	11.000	12.000 13	0.0378
15	7.41	11.300	10.000 11	-0.0531
16	8.36	9.500	8.500 8 1/2	-0.0483
17	9.22	4.000	3.400 3 1/2	-0.0706
18	9.87	2.900	1.300 1.35	-0.3485
-----				
LOG AVERAGE:				0.8899

ALL POINTS MEASURED ON <sup>20</sup>~~5-12-91~~ 5-22-92 BY WALTER KOWALCZYK  
USING NEMS-CLARKE 120E S/N 630

- CARL E. SMITH CONSULTING ENGINEERS -

Figure 3

WDDZ 1992 190.5-degree Partial Proof

TABLE 2.4  
NIGHTTIME DIRECTIONAL  
FIELD STRENGTH MEASUREMENTS  
190.50 DEGREE RADIAL

THE HEARST CORPORATION  
PITTSBURGH, PA

(1) POINT	(2) DISTANCE (mi)	(3) 1974 NIGHTTIME FIELD STRENGTH (mV/m)	(4) PRESENT NIGHTTIME FIELD STRENGTH (mV/m)	(5) LOG RATIO (4)/(3)
G-MP	1.17	158.000	150.000 151	-0.0226
10	2.28	43.000	44.000 46	0.0100
11	2.63	33.000	32.000 31	-0.0134
12	3.17	24.500	24.000 25	-0.0090
13	3.62	19.000	17.500 17	-0.0357
14	4.60	15.500	13.000 14	-0.0764
15	5.46	12.000	8.800 9.4	-0.1347
16	5.83	13.000	9.400 10.2	-0.1408
17	6.73	6.000	4.500 5.2	-0.1249
18	6.93	6.700	4.400 4.9	-0.1826
19	7.83	5.000	3.700 4.3	-0.1308

LOG AVERAGE: 0.8351

5-26-92  
ALL POINTS MEASURED ON ~~5/12/91~~ BY WALTER KOWALCZYK  
USING NEMS-CLARKE 120E S/H 630

- CARL E. SMITH CONSULTING ENGINEERS -

Figure 4

WDDZ 1992 231.5-degree Partial Proof

TABLE 2.5  
NIGHTTIME DIRECTIONAL  
FIELD STRENGTH MEASUREMENTS  
231.50 DEGREE RADIAL

-----  
THE HEARST CORPORATION  
PITTSBURGH, PA

(1)	(2)	(3)	(4)	(5)
POINT	DISTANCE	NIGHTTIME	PRESENT	LOG
7-MP	(mi)	FIELD STRENGTH	NIGHTTIME	RATIO
		(mV/m)	FIELD STRENGTH	(4)/(3)
	1.20	162.000	162.000	0.0000
9	1.76	101.000	104.000	0.0127
10	2.23	40.000	47.000	0.0700
11	3.00	33.000	30.000	-0.0414
12	3.24	49.500	36.000	-0.1383
13	3.63	47.000	24.000	-0.2919
14	3.93	32.600	27.000	-0.0819
15	4.36	16.500	14.500	-0.0561
16	4.65	23.100	14.000	-0.2175
17	4.97	15.900	12.300	-0.1115
18	5.30	15.000	12.600	-0.0757
19	6.18	15.000	12.500	-0.0792

LOG AVERAGE: 0.8237

5-26-92  
ALL POINTS MEASURED ON 5/13/91 BY WALTER KOWALCZYK  
USING NEMS-CLARKE 120E S/N 630

- CARL E. SMITH CONSULTING ENGINEERS -



Figure 5

WDDZ 1992 264.5-degree Partial Proof

TABLE 2.6  
NIGHTTIME DIRECTIONAL  
FIELD STRENGTH MEASUREMENTS  
264.50 DEGREE RADIAL  
-----  
THE HEARST CORPORATION  
PITTSBURGH, PA

(1)	(2)	(3)	(4)	(5)
POINT	DISTANCE	1974 NIGHTTIME FIELD STRENGTH	PRESENT NIGHTTIME FIELD STRENGTH	LOG RATIO
	(mi)	(mV/m)	(mV/m)	(4)/(3)
6-MP	1.25	187.000	190.000 178	0.0069
10	2.10	85.000	87.000 100	0.0101
11	2.53	76.000	70.000 65	-0.0357
12	2.67	51.500	47.000 47	-0.0397
13	3.18	62.500	60.000 60	-0.0177
14	3.48	35.000	32.500 31	-0.0322
15	3.73	47.500	42.000 42	-0.0534
16	4.14	30.000	24.000 27	-0.0969
17	4.63	34.500	28.500 31	-0.0830
18	4.94	24.000	22.000 22	-0.0378
19	5.40	22.300	18.500 20	-0.0811

LOG AVERAGE: 0.9081

5-26-92  
ALL POINTS MEASURED ON ~~6/3/91~~ BY WALTER KOWALCZYK  
USING NEHS-CLARKE 120E S/N 630

- CARL E. SMITH CONSULTING ENGINEERS -

Figure 6

# Overall Measurement Locations

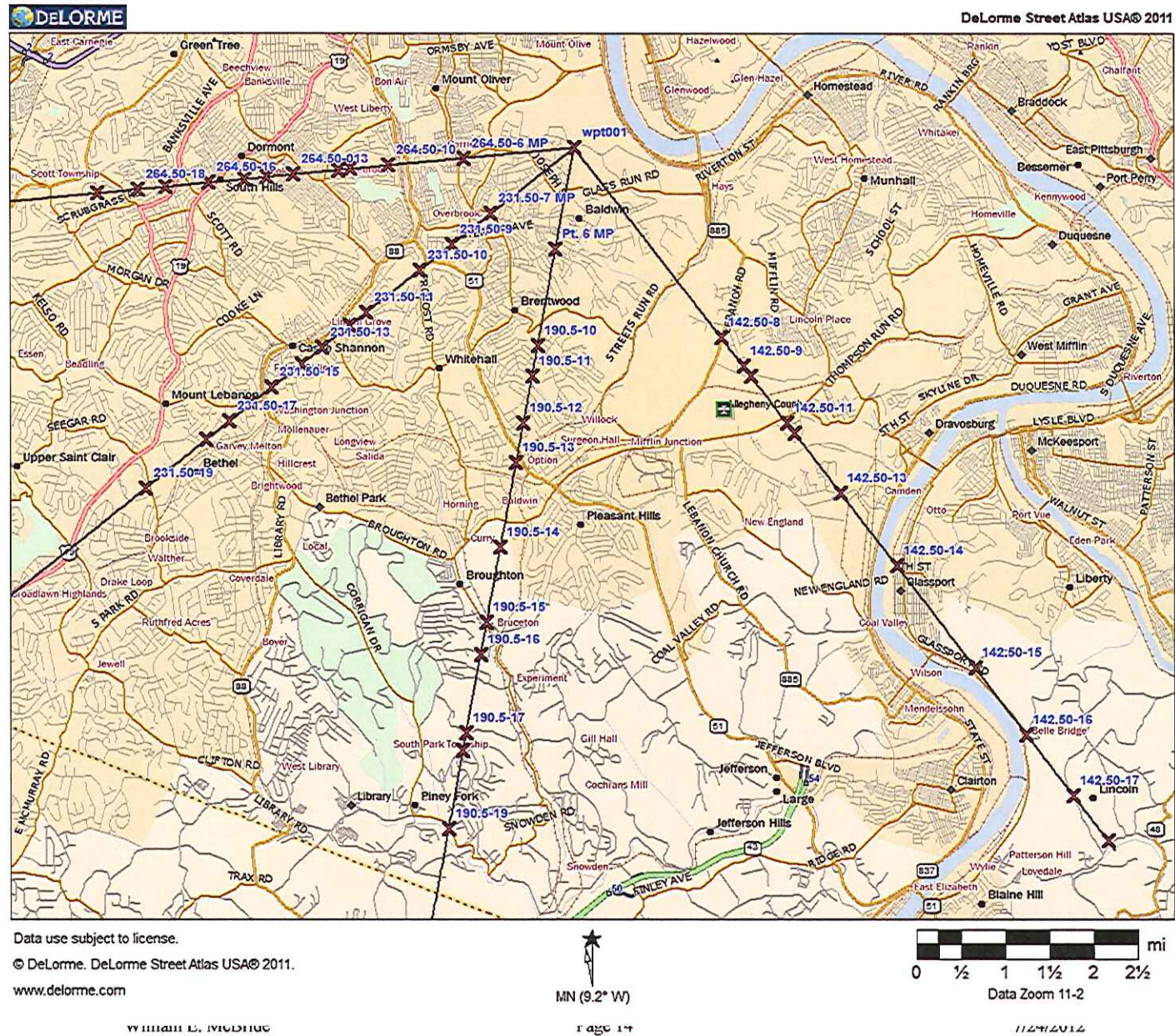
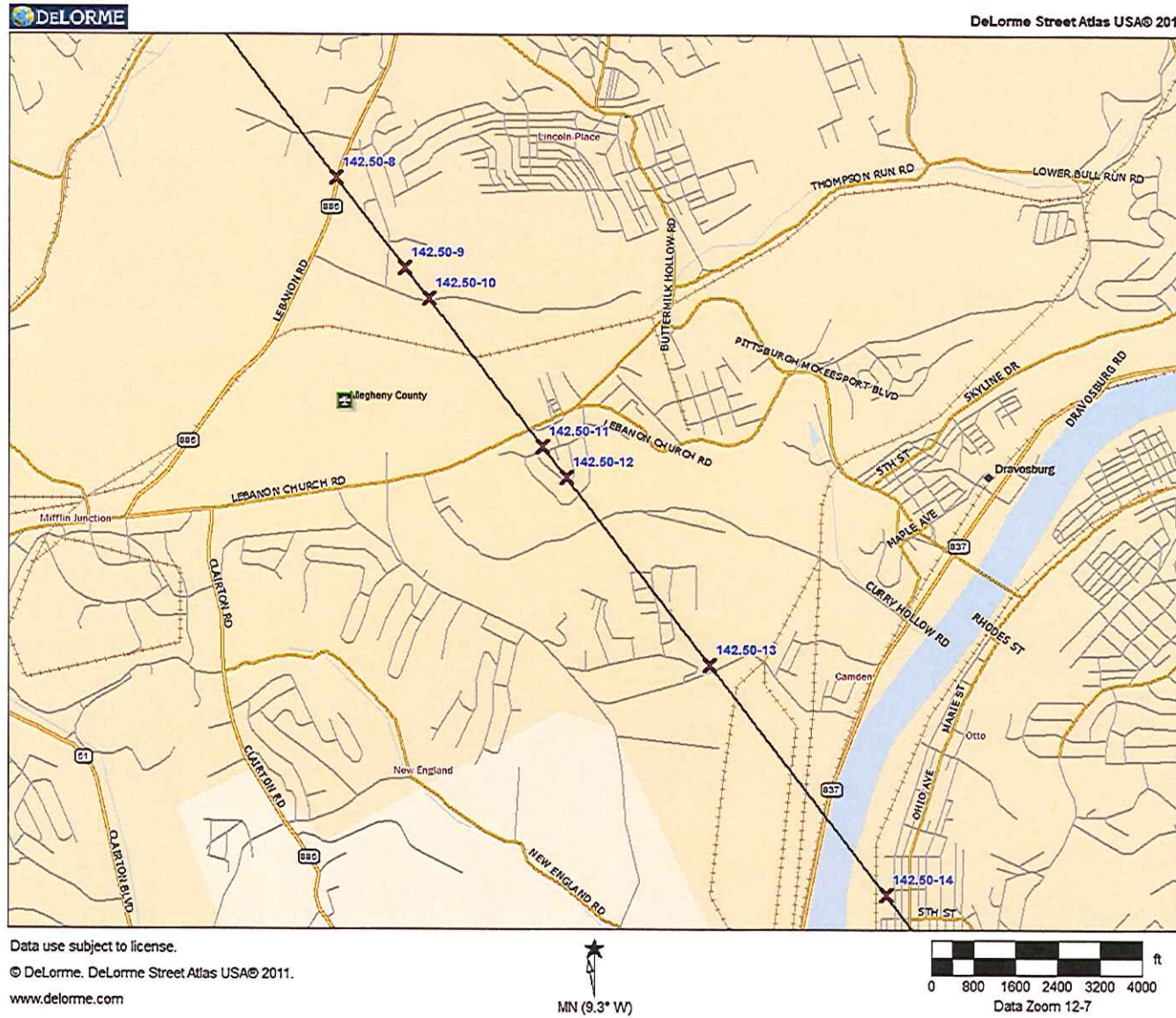




Figure 7

142.5-degree Measurement Locations-(1)



### 142.5-degree Measurement Locations-(2)

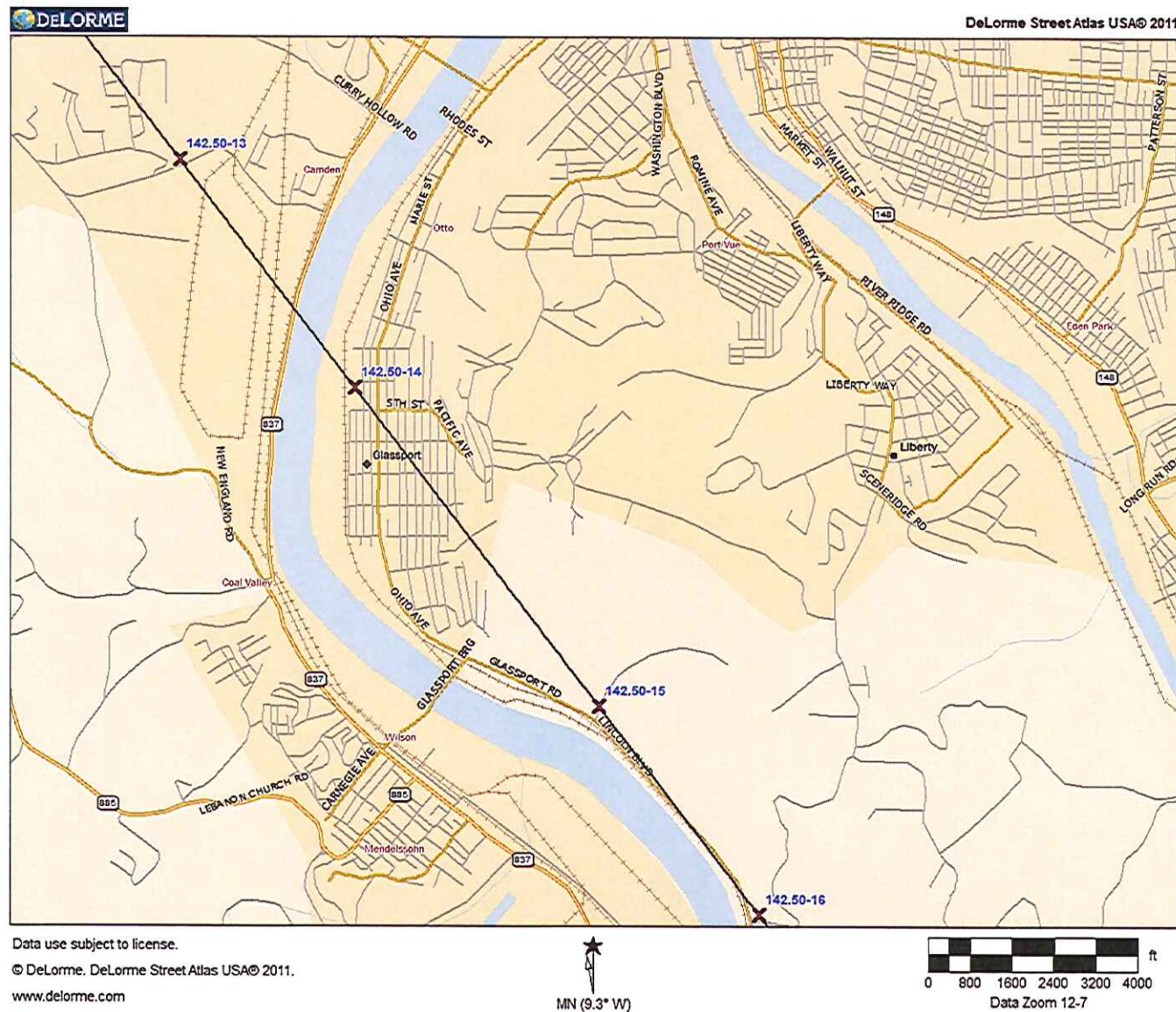




Figure 9

142.5-degree Measurement Locations-(3)

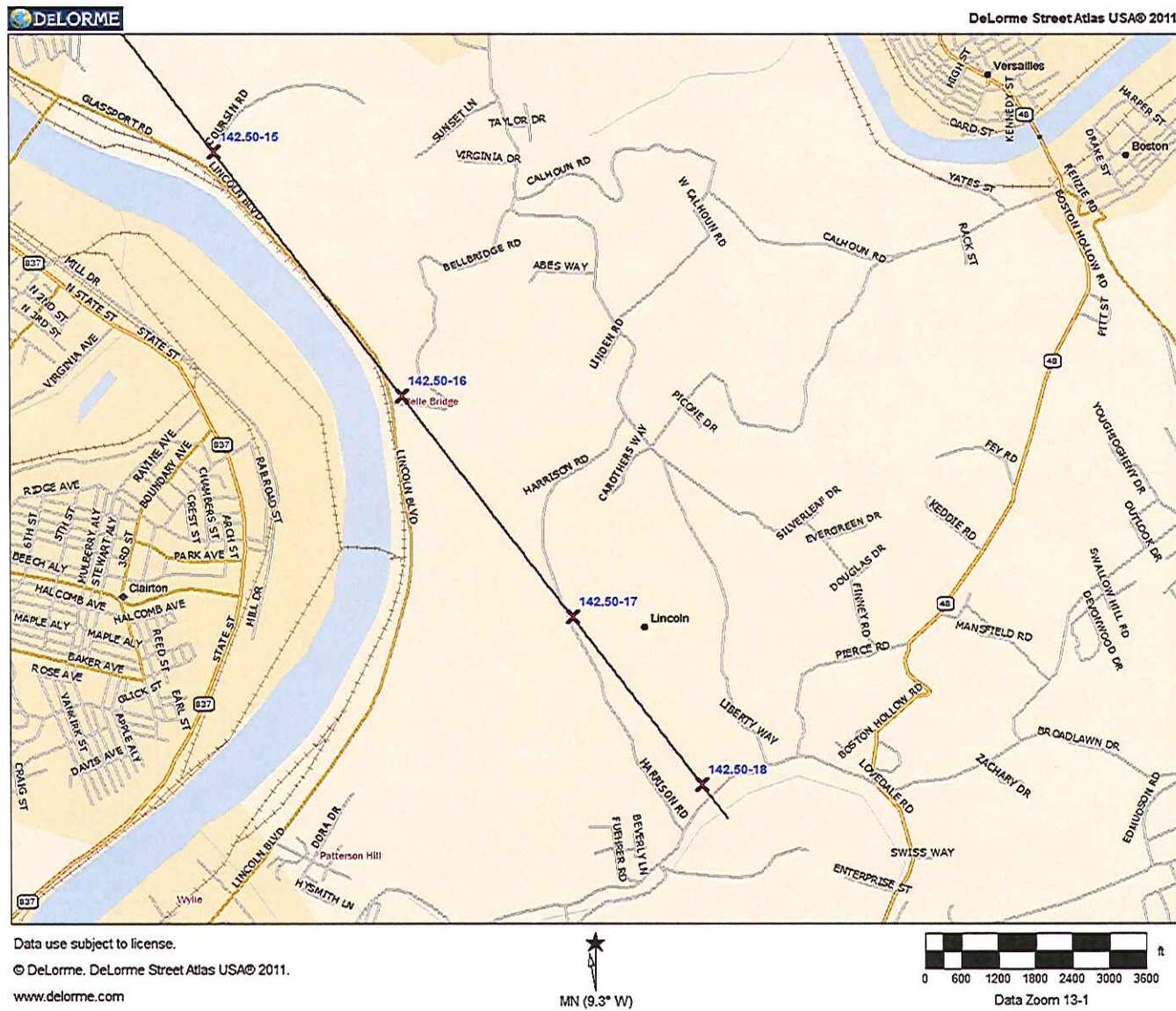


Figure 10

190.5-degree Measurement Locations-(1)

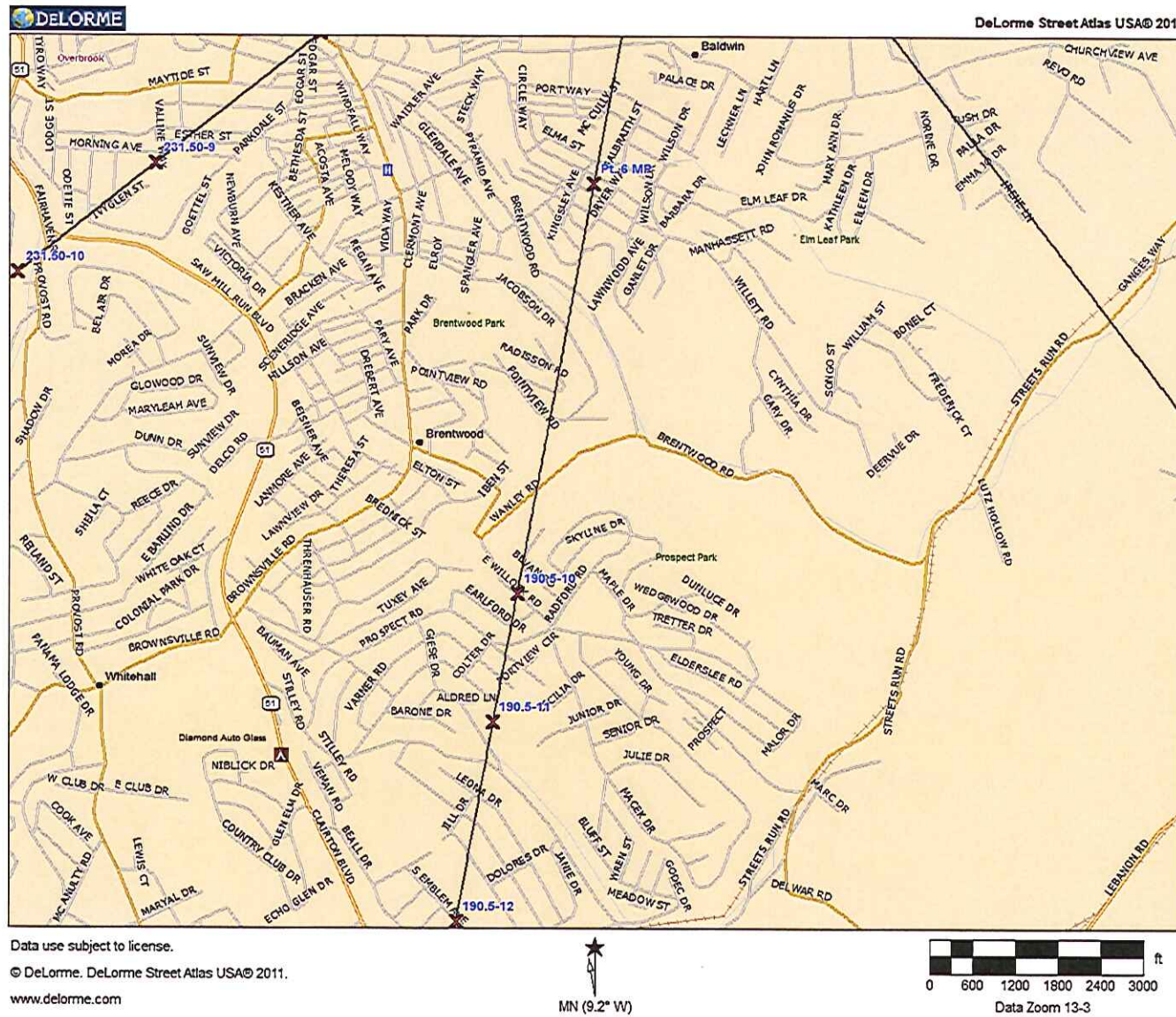






Figure 12

190.5-degree Measurement Locations-(3)

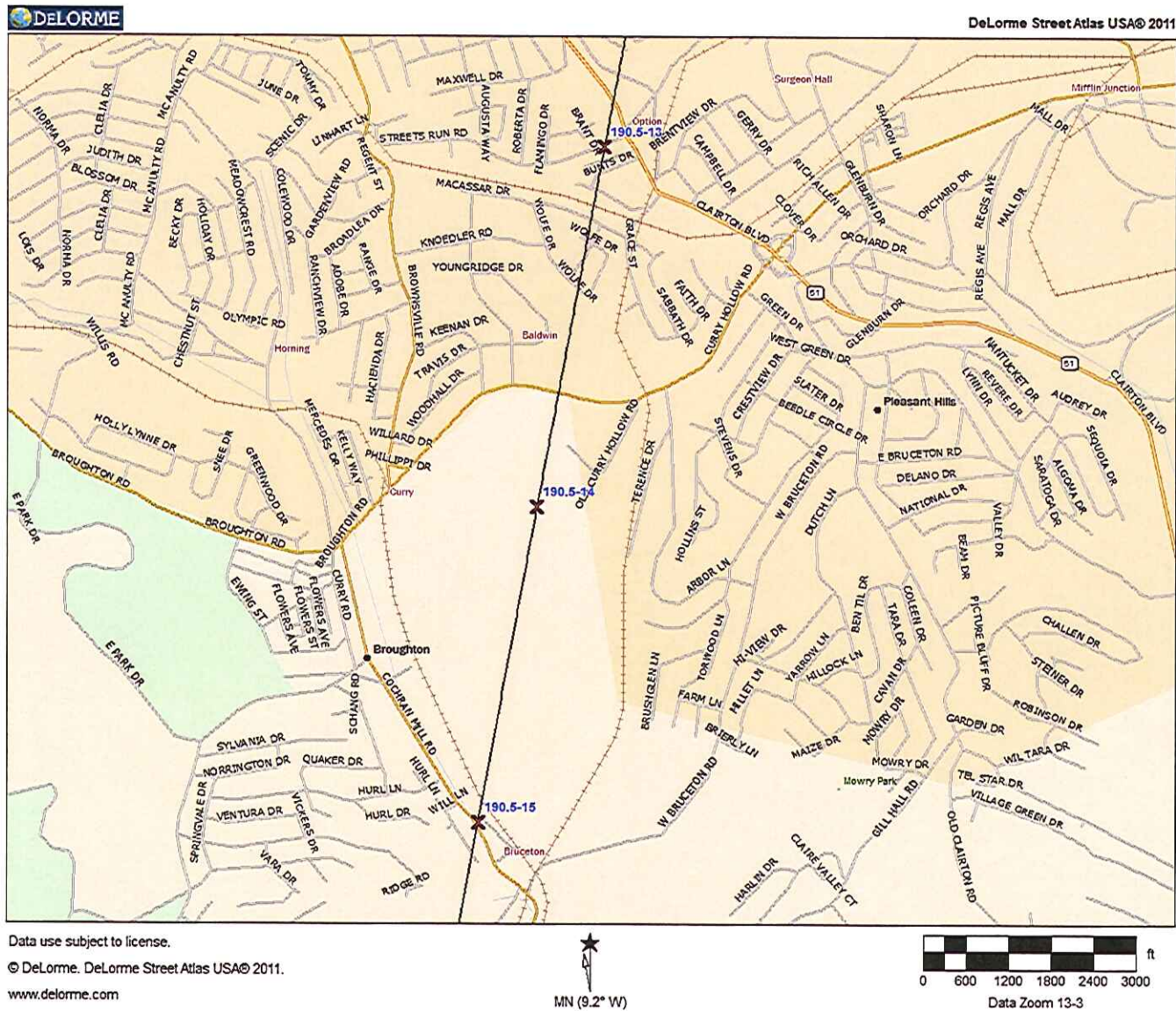




Figure 13

190.5-degree Measurement Locations-(4)

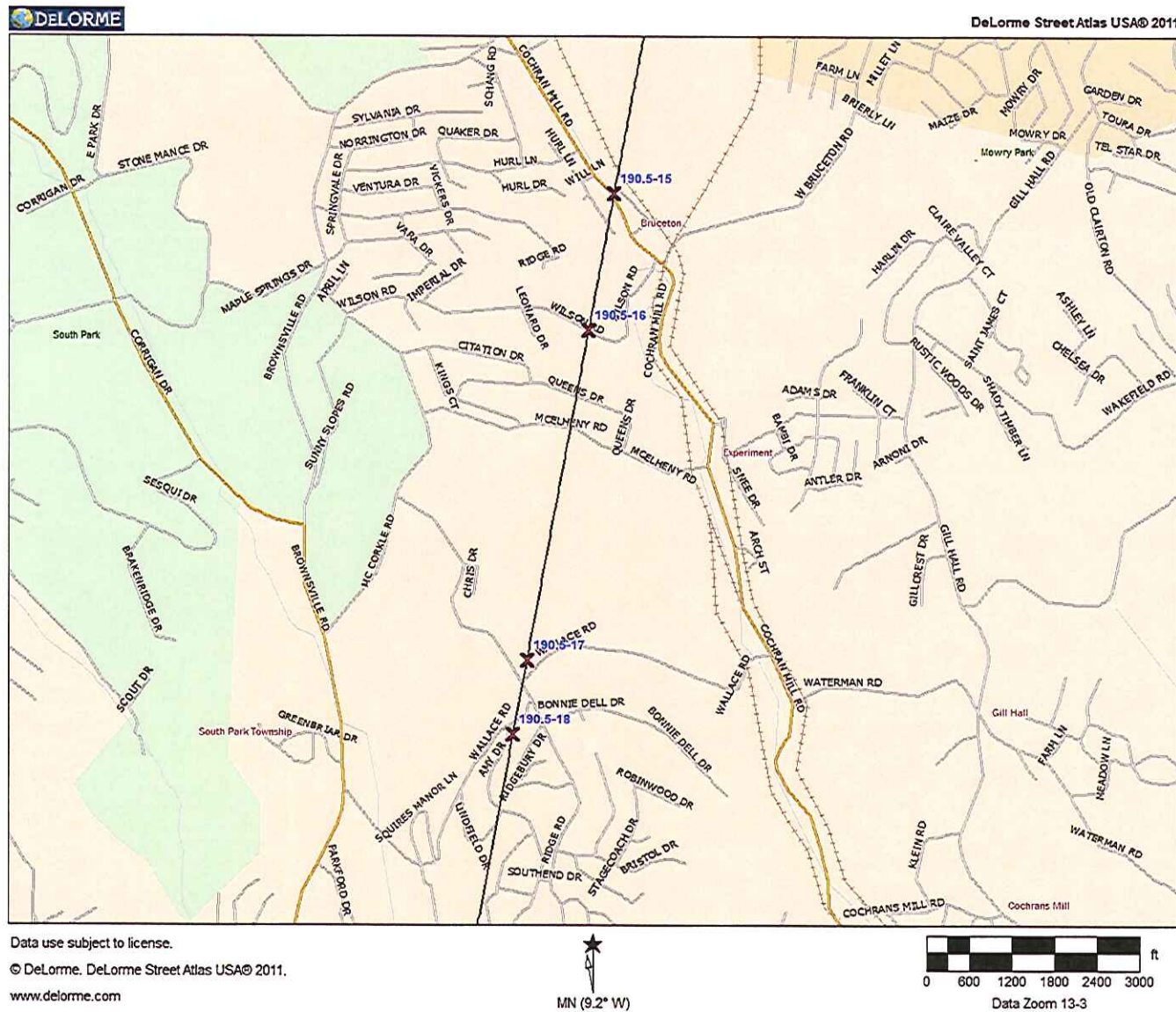


Figure 14

# 231.5-degree Measurement Locations-(1)

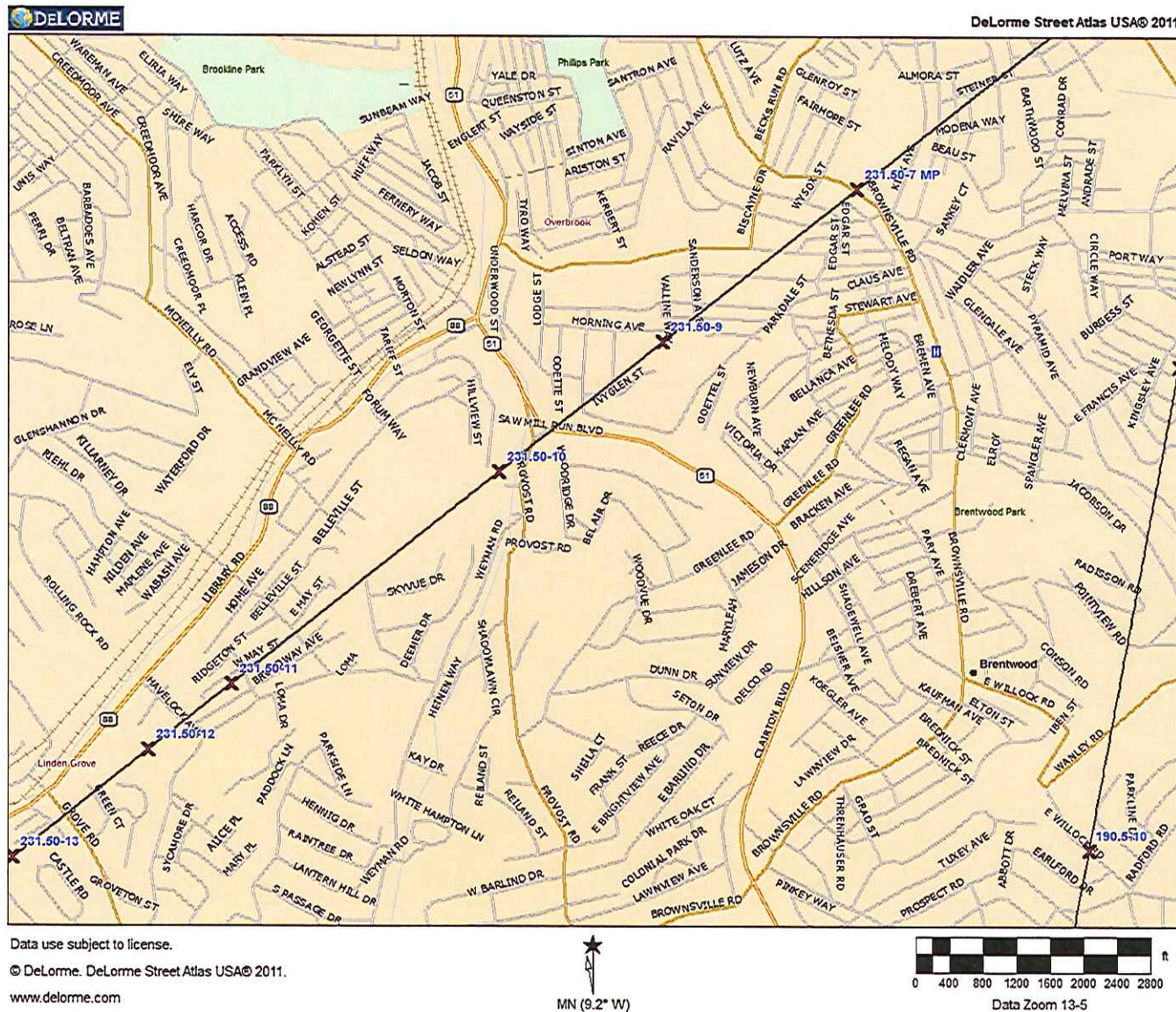




Figure 15

231.5-degree Measurement Locations-(2)

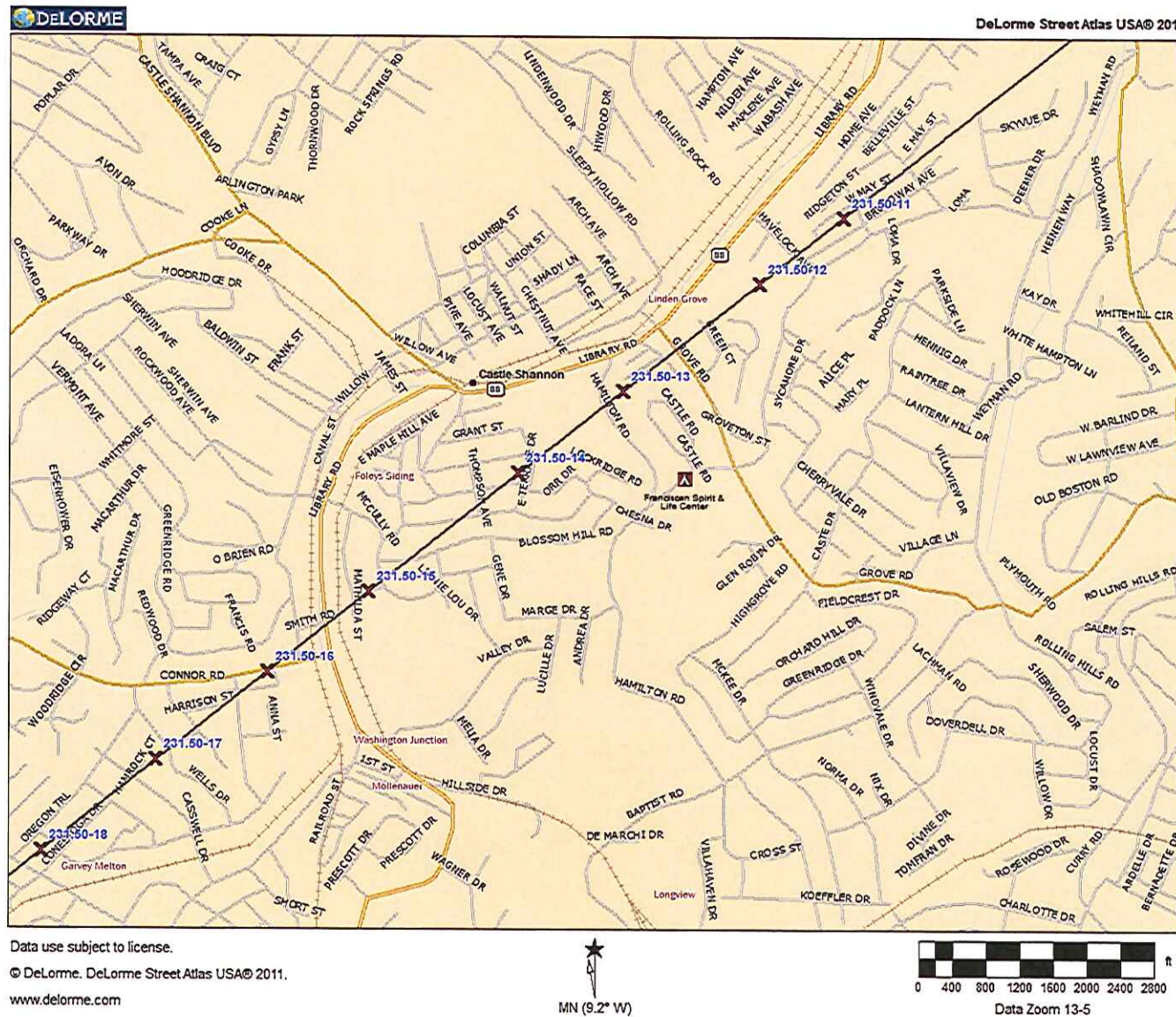




Figure 16

231.5-degree Measurement Locations-(3)

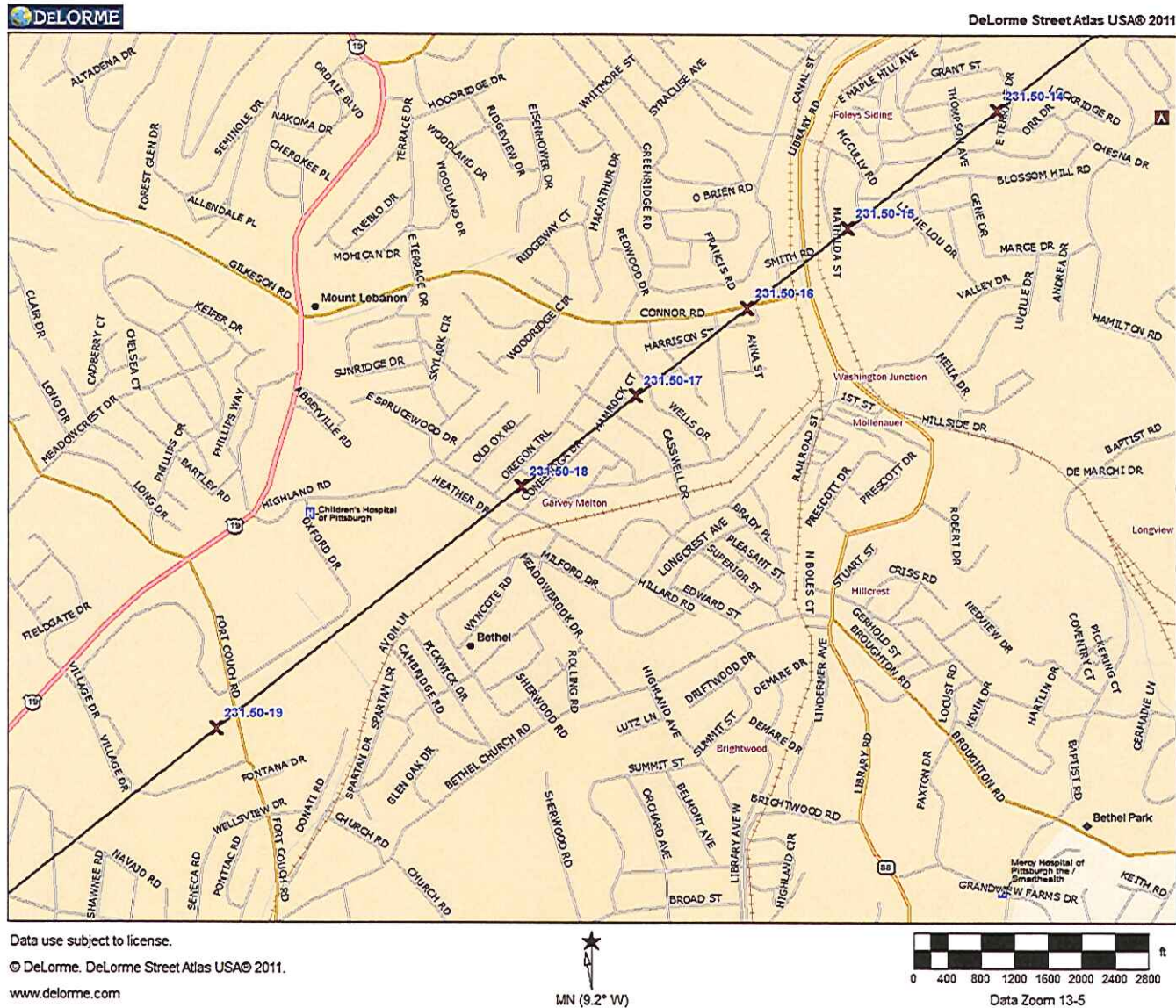
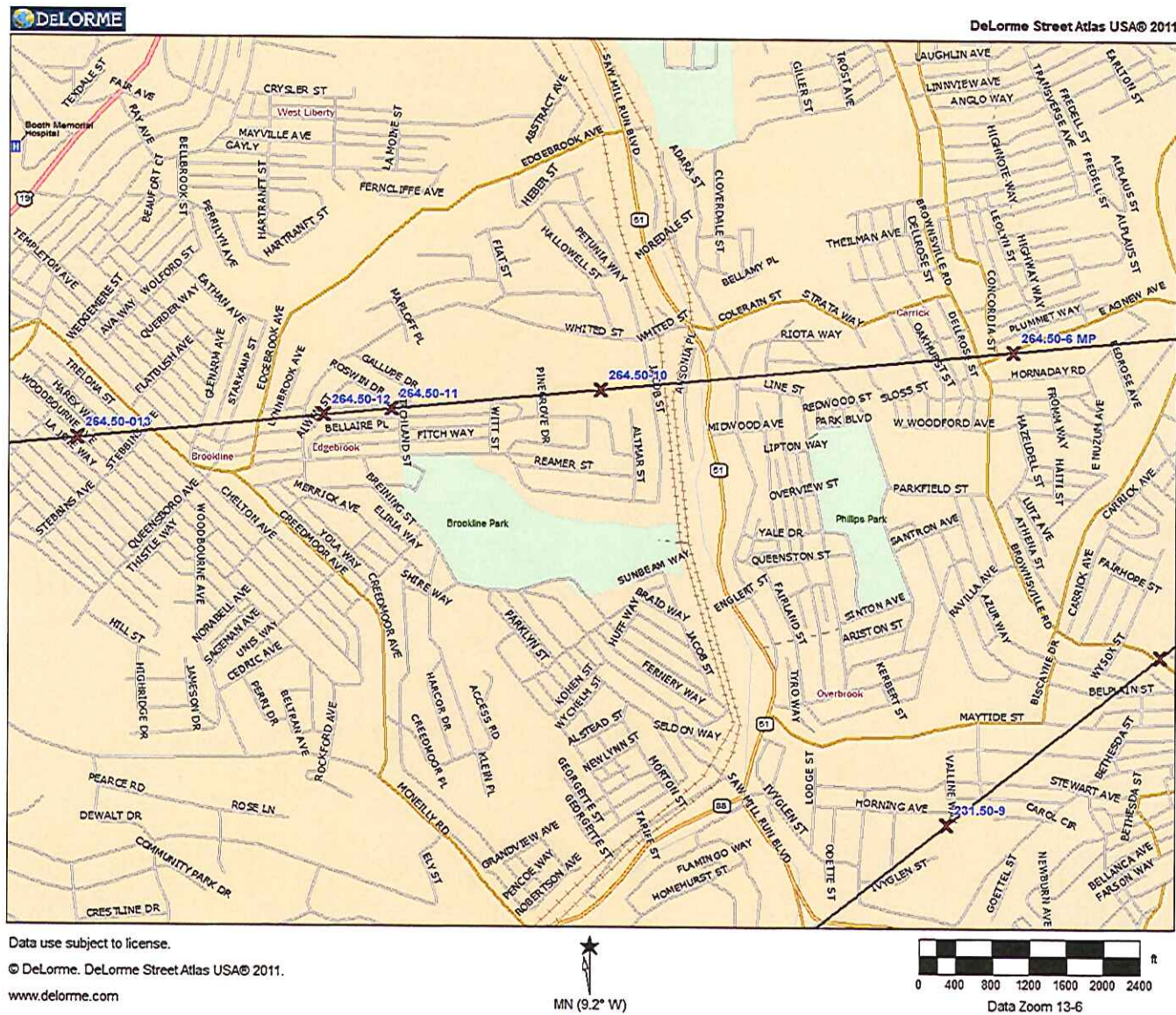




Figure 17

264.5-degree Measurement Locations-(1)



Data use subject to license.

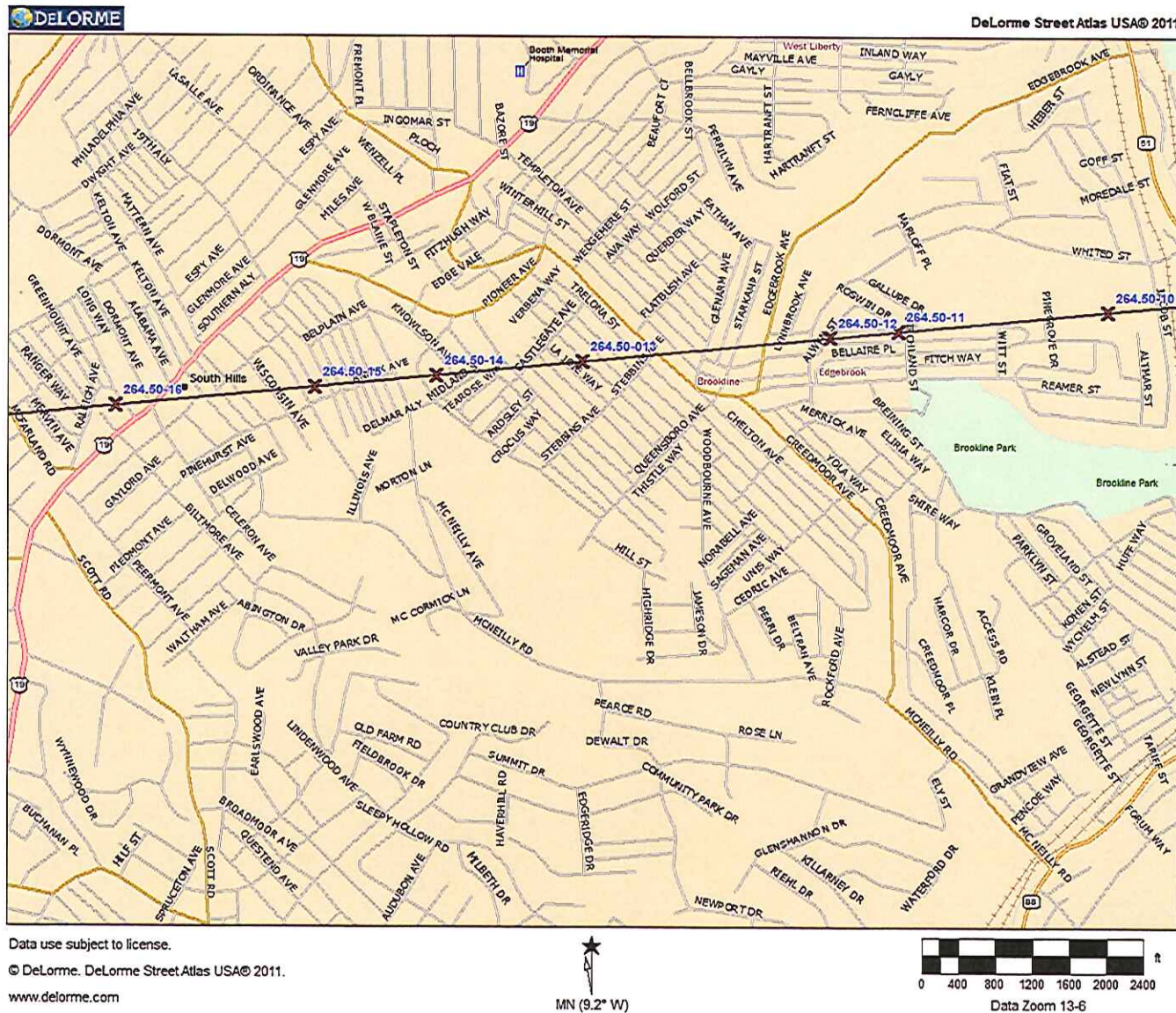
© DeLorme. DeLorme Street Atlas USA 2011.

www.delorme.com



Figure 18

264.5-degree Measurement Locations-(2)

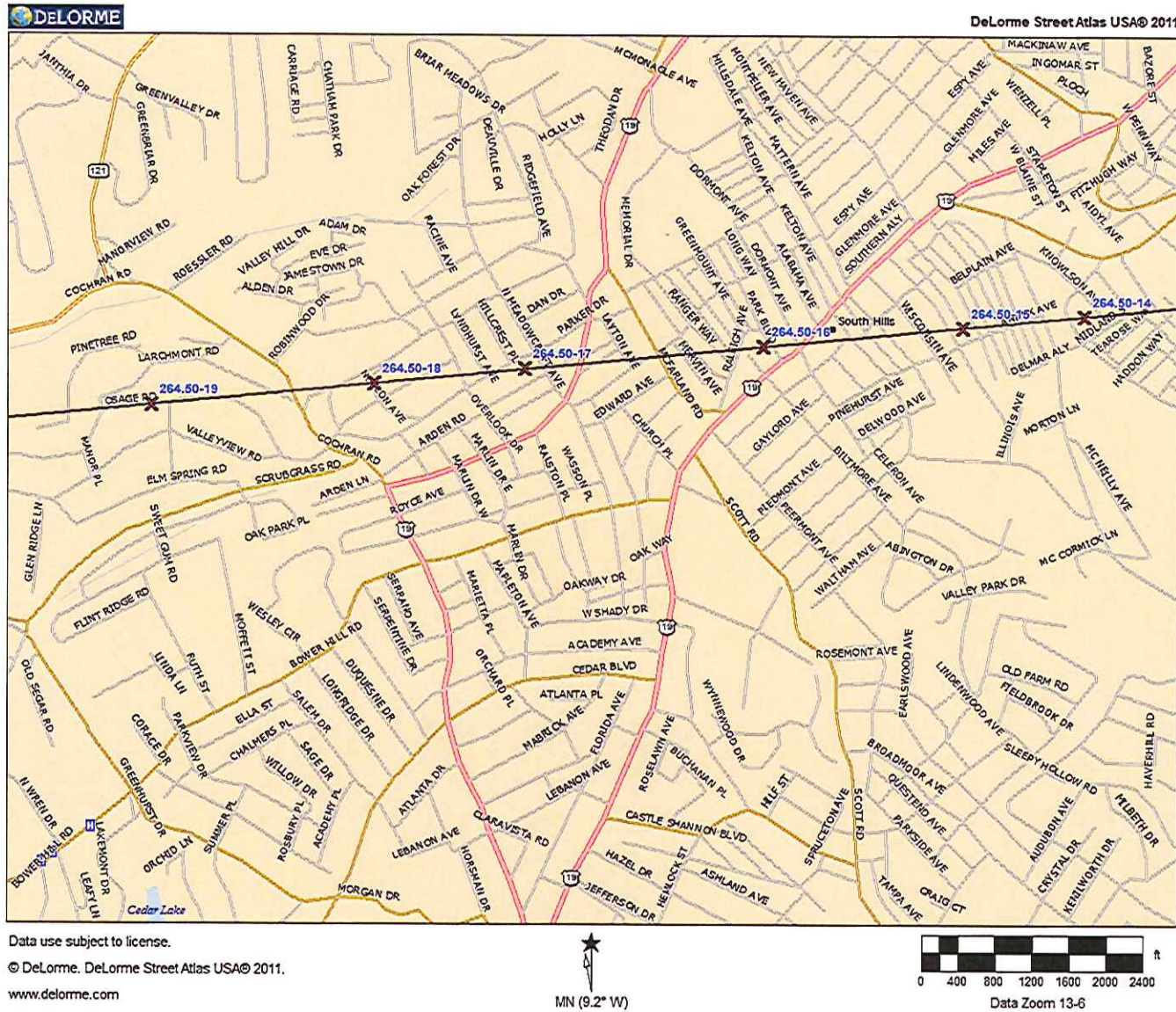


Data use subject to license.  
 © DeLorme. DeLorme Street Atlas USA © 2011.  
 www.delorme.com



Figure 19

264.5-degree Measurement Locations-(3)







**SYSTEMS WITH RELIABILITY, LP**  
Broadcast Antennas & Transmission Systems



## SYSTEM DATA SHEET

Customer Radio Power Inc.  
Contact Tim Martz  
Location Pittsburgh, PA  
Call Letters W261AX  
Antenna Model FMEC-2  
Channel / Frequency 100.1 MHz

### ELECTRICAL SPECIFICATIONS

Polarization Type		Circular	
Polarization Ratio			
	H-Pol. (PRH)	50.00	%
	V-Pol. (PRV)	50.00	%
Elevation Directivity (ED) H-Pol.		1.390	
Elevation Directivity (ED) V-Pol.		1.390	
Azimuth Directivity (AD) H-Pol.		1.007	
Azimuth Directivity (AD) V-Pol.		1.007	
Antenna Efficiency		96.00	%
Antenna Gain (GH)			
	H-Pol. (GH)	0.672	
	V-Pol. (GV)	0.672	
dB Gain (AG)			
	H-Pol (AGH)	-1.727	dB
	V-Pol (AGV)	-1.727	dB
ERP			
	H-Pol. (ERPH)	0.099	kW
	V-Pol. (ERPV)	0.099	kW
Line Type		7/8" Foam	LDF5-50A
Attenuation		0.364	dB/100'
Line length	**SUPPLIED	** 425.000	ft.
Total line attenuation		1.547	
Line Efficiency (LE)		70.03	%
Line Loss (LPL)		0.063	kW
Antenna Input Power (AIP)		0.147	kW
Req'd. Transmitter Output Power		0.210	kW

### MECHANICAL SPECIFICATIONS

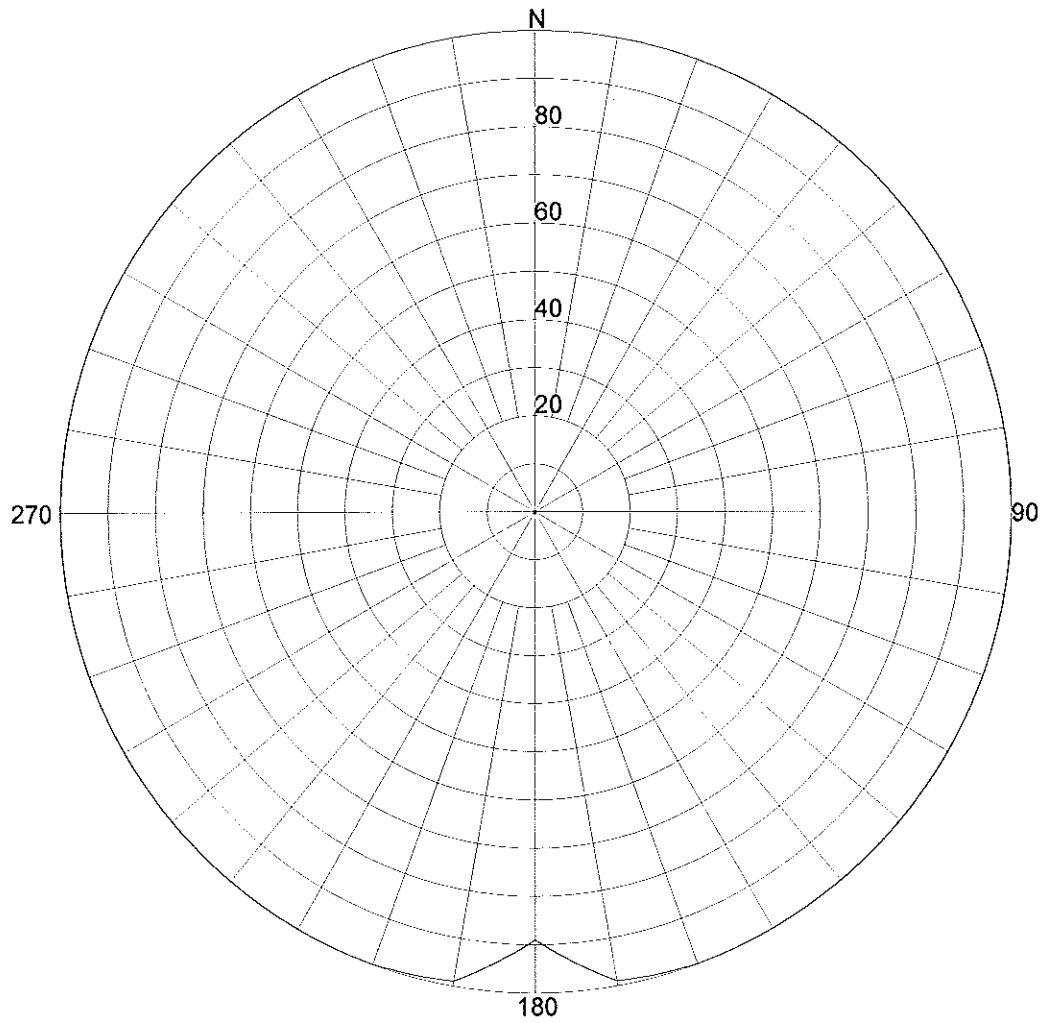
No. Of Bays	2	#		
Antenna Aperture	4.91	ft.	1.50	m
Antenna Total Length	6.58	ft.	2.01	m
Center of Radiation AGL	360.91	ft.	110.00	m
Antenna Weight including brackets	185.00	lbs.	84.09	kg
Windload CaAc / 50/33 psf	7.20	ft.^2	250.00	lbs.

**EXHIBIT B2**  
**APPLICATION FOR STATION LICENSE**  
**RADIO POWER, INC.**  
**W261AX FM TRANSLATOR**  
**CH 261D -100.1 MHZ - 0.099 KW**  
**PITTSBURGH, PENNSYLVANIA**  
**July 2012**

Prepared by:

*Mark A. Gergely*

Mark A. Gergely  
SWR, LP, Engineering



Azimuth Pattern

## Systems With Reliability

Scale: Linear

Unit: Relative Field

Date: 7/16/2012

CLIENT: W261AX

ANTENNA TYPE: FMEC-2

FREQUENCY: 100.1 MHz

PATTERN POL.: Circular

AZ. DIRECTIVITY: 1.00702 / 0.03dB

CIRCULARITY(+/-dB):

PATTERN RMS: 0.997

## Relative Field Tabulation(Azimuth)

Azimuth Heading	Normalized Field(dB)	Azimuth Heading	Normalized Field(dB)
0	1.0000 ( 0 )	180	.8900 (-1.012 )
5	1.0000 ( 0 )	185	.9400 (-0.537 )
10	1.0000 ( 0 )	190	.9900 (-0.087 )
15	1.0000 ( 0 )	195	.9950 (-0.044 )
20	1.0000 ( 0 )	200	1.0000 ( 0 )
25	1.0000 ( 0 )	205	1.0000 ( 0 )
30	1.0000 ( 0 )	210	1.0000 ( 0 )
35	1.0000 ( 0 )	215	1.0000 ( 0 )
40	1.0000 ( 0 )	220	1.0000 ( 0 )
45	1.0000 ( 0 )	225	1.0000 ( 0 )
50	1.0000 ( 0 )	230	1.0000 ( 0 )
55	1.0000 ( 0 )	235	1.0000 ( 0 )
60	1.0000 ( 0 )	240	1.0000 ( 0 )
65	1.0000 ( 0 )	245	1.0000 ( 0 )
70	1.0000 ( 0 )	250	1.0000 ( 0 )
75	1.0000 ( 0 )	255	1.0000 ( 0 )
80	1.0000 ( 0 )	260	1.0000 ( 0 )
85	1.0000 ( 0 )	265	1.0000 ( 0 )
90	1.0000 ( 0 )	270	1.0000 ( 0 )
95	1.0000 ( 0 )	275	1.0000 ( 0 )
100	1.0000 ( 0 )	280	1.0000 ( 0 )
105	1.0000 ( 0 )	285	1.0000 ( 0 )
110	1.0000 ( 0 )	290	1.0000 ( 0 )
115	1.0000 ( 0 )	295	1.0000 ( 0 )
120	1.0000 ( 0 )	300	1.0000 ( 0 )
125	1.0000 ( 0 )	305	1.0000 ( 0 )
130	1.0000 ( 0 )	310	1.0000 ( 0 )
135	1.0000 ( 0 )	315	1.0000 ( 0 )
140	1.0000 ( 0 )	320	1.0000 ( 0 )
145	1.0000 ( 0 )	325	1.0000 ( 0 )
150	1.0000 ( 0 )	330	1.0000 ( 0 )
155	1.0000 ( 0 )	335	1.0000 ( 0 )
160	1.0000 ( 0 )	340	1.0000 ( 0 )
165	.9950 (-0.044 )	345	1.0000 ( 0 )
170	.9900 (-0.087 )	350	1.0000 ( 0 )
175	.9400 (-0.537 )	355	1.0000 ( 0 )

## Systems With Reliability

CLIENT: W261AX

Date: 7/16/2012

ANTENNA TYPE: FMEC-2

FREQUENCY: 100.1 MHz

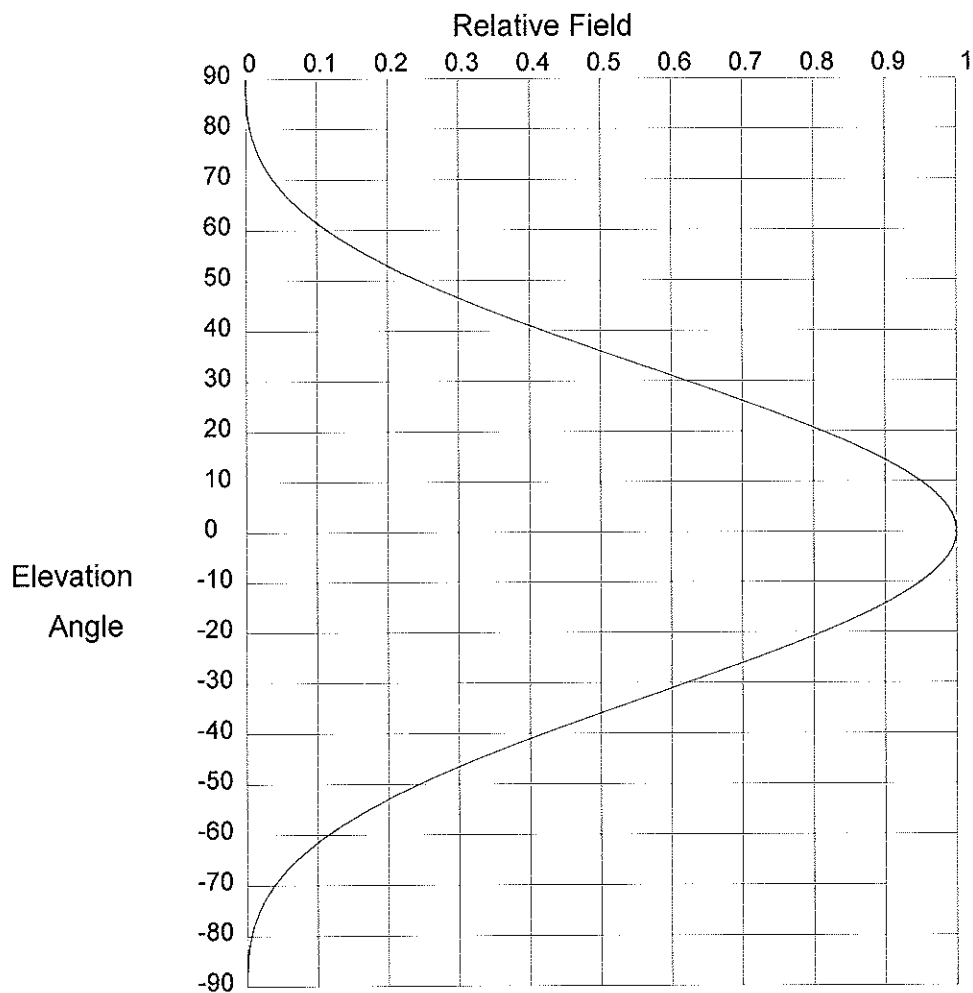
PATTERN POL.: Circular

CIRCULARITY(+/-dB):

AZ. DIRECTIVITY: 1.00702 / 0.03dB

PATTERN RMS: 0.997





## Elevation Pattern

Scale: Linear

Units: Field, Relative

### Systems With Reliability

Date: 7/16/2012

CLIENT: W261AX  
ANTENNA TYPE: FMEC-2  
FREQUENCY: 100.1 MHz  
PATTERN POL.: Circular  
DIRECTIVITY(Peak): 1.39/1.43 dBd  
DIRECTIVITY(Horiz): 1.39/1.43 dBd

Beam Tilt (Deg.) : 0  
Null Fill(s)(%) : 0, 0, 0

## Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.00 (-50)	52.0	.214 (-13.4)	14.0	.904 (-0.878)
89.0	.00 (-91.156)	51.0	.229 (-12.821)	13.0	.917 (-0.757)
88.0	.00 (-78.01)	50.0	.244 (-12.26)	12.0	.929 (-0.644)
87.0	.00 (-69.988)	49.0	.259 (-11.717)	11.0	.94 (-0.541)
86.0	.001 (-64.112)	48.0	.276 (-11.191)	10.0	.95 (-0.447)
85.0	.001 (-59.44)	47.0	.292 (-10.682)	9.8	.952 (-0.429)
84.0	.002 (-55.546)	46.0	.309 (-10.188)	9.6	.954 (-0.412)
83.0	.002 (-52.199)	45.0	.327 (-9.71)	9.4	.956 (-0.395)
82.0	.003 (-49.26)	44.0	.345 (-9.246)	9.2	.957 (-0.378)
81.0	.005 (-46.639)	43.0	.363 (-8.797)	9.0	.959 (-0.362)
80.0	.006 (-44.272)	42.0	.382 (-8.362)	8.8	.961 (-0.346)
79.0	.008 (-42.113)	41.0	.401 (-7.941)	8.6	.963 (-0.33)
78.0	.01 (-40.128)	40.0	.42 (-7.533)	8.4	.964 (-0.315)
77.0	.012 (-38.292)	39.0	.44 (-7.138)	8.2	.966 (-0.3)
76.0	.015 (-36.583)	38.0	.459 (-6.756)	8.0	.968 (-0.286)
75.0	.018 (-34.986)	37.0	.479 (-6.387)	7.8	.969 (-0.272)
74.0	.021 (-33.487)	36.0	.50 (-6.029)	7.6	.971 (-0.258)
73.0	.025 (-32.074)	35.0	.52 (-5.683)	7.4	.972 (-0.244)
72.0	.029 (-30.74)	34.0	.54 (-5.349)	7.2	.974 (-0.231)
71.0	.034 (-29.475)	33.0	.561 (-5.027)	7.0	.975 (-0.219)
70.0	.039 (-28.274)	32.0	.581 (-4.716)	6.8	.977 (-0.206)
69.0	.044 (-27.13)	31.0	.601 (-4.416)	6.6	.978 (-0.194)
68.0	.05 (-26.039)	30.0	.622 (-4.126)	6.4	.979 (-0.183)
67.0	.056 (-24.997)	29.0	.642 (-3.848)	6.2	.98 (-0.171)
66.0	.063 (-24)	28.0	.662 (-3.58)	6.0	.982 (-0.161)
65.0	.07 (-23.044)	27.0	.682 (-3.323)	5.8	.983 (-0.15)
64.0	.078 (-22.126)	26.0	.702 (-3.076)	5.6	.984 (-0.14)
63.0	.087 (-21.245)	25.0	.721 (-2.839)	5.4	.985 (-0.13)
62.0	.096 (-20.397)	24.0	.74 (-2.612)	5.2	.986 (-0.121)
61.0	.105 (-19.581)	23.0	.759 (-2.395)	5.0	.987 (-0.111)
60.0	.115 (-18.794)	22.0	.777 (-2.188)	4.8	.988 (-0.103)
59.0	.125 (-18.036)	21.0	.795 (-1.991)	4.6	.989 (-0.094)
58.0	.136 (-17.304)	20.0	.812 (-1.804)	4.4	.99 (-0.086)
57.0	.148 (-16.597)	19.0	.829 (-1.626)	4.2	.991 (-0.079)
56.0	.16 (-15.914)	18.0	.846 (-1.457)	4.0	.992 (-0.071)
55.0	.173 (-15.254)	17.0	.861 (-1.299)	3.8	.993 (-0.064)
54.0	.186 (-14.615)	16.0	.876 (-1.149)	3.6	.993 (-0.058)
53.0	.20 (-13.998)	15.0	.89 (-1.009)	3.4	.994 (-0.052)

## Systems With Reliability

Page 1 of 3

CLIENT: W261AX  
 ANTENNA TYPE: FMEC-2  
 FREQUENCY: 100.1 MHz  
 PATTERN POL.: Circular  
 DIRECTIVITY(Peak): 1.39/1.43 dBd  
 DIRECTIVITY(Horiz): 1.39/1.43 dBd

Date: 7/16/2012

Beam Tilt (Deg.) : 0  
 Null Fill(s)(%) : 0, 0, 0

## Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.995 (-0.046)	-4.4	.99 (-0.086)	-12.0	.929 (-0.644)
3.0	.995 (-0.04)	-4.6	.989 (-0.094)	-12.2	.926 (-0.666)
2.8	.996 (-0.035)	-4.8	.988 (-0.103)	-12.4	.924 (-0.688)
2.6	.997 (-0.03)	-5.0	.987 (-0.111)	-12.6	.921 (-0.711)
2.4	.997 (-0.026)	-5.2	.986 (-0.121)	-12.8	.919 (-0.733)
2.2	.998 (-0.022)	-5.4	.985 (-0.13)	-13.0	.917 (-0.757)
2.0	.998 (-0.018)	-5.6	.984 (-0.14)	-13.2	.914 (-0.78)
1.8	.998 (-0.014)	-5.8	.983 (-0.15)	-13.4	.912 (-0.804)
1.6	.999 (-0.011)	-6.0	.982 (-0.161)	-13.6	.909 (-0.828)
1.4	.999 (-0.009)	-6.2	.98 (-0.171)	-13.8	.906 (-0.853)
1.2	.999 (-0.006)	-6.4	.979 (-0.183)	-14.0	.904 (-0.878)
1.0	.999 (-0.004)	-6.6	.978 (-0.194)	-14.2	.901 (-0.904)
.8	1.00 (-0.003)	-6.8	.977 (-0.206)	-14.4	.899 (-0.929)
.6	1.00 (-0.002)	-7.0	.975 (-0.219)	-14.6	.896 (-0.956)
.4	1.00 (-0.001)	-7.2	.974 (-0.231)	-14.8	.893 (-0.982)
.2	1.00 (0)	-7.4	.972 (-0.244)	-15.0	.89 (-1.009)
.0	1.00 (0)	-7.6	.971 (-0.258)	-15.2	.888 (-1.036)
-.2	1.00 (0)	-7.8	.969 (-0.272)	-15.4	.885 (-1.064)
-.4	1.00 (-0.001)	-8.0	.968 (-0.286)	-15.6	.882 (-1.092)
-.6	1.00 (-0.002)	-8.2	.966 (-0.3)	-15.8	.879 (-1.12)
-.8	1.00 (-0.003)	-8.4	.964 (-0.315)	-16.0	.876 (-1.149)
-1.0	.999 (-0.004)	-8.6	.963 (-0.33)	-16.2	.873 (-1.178)
-1.2	.999 (-0.006)	-8.8	.961 (-0.346)	-16.4	.87 (-1.208)
-1.4	.999 (-0.009)	-9.0	.959 (-0.362)	-16.6	.867 (-1.238)
-1.6	.999 (-0.011)	-9.2	.957 (-0.378)	-16.8	.864 (-1.268)
-1.8	.998 (-0.014)	-9.4	.956 (-0.395)	-17.0	.861 (-1.299)
-2.0	.998 (-0.018)	-9.6	.954 (-0.412)	-17.2	.858 (-1.33)
-2.2	.998 (-0.022)	-9.8	.952 (-0.429)	-17.4	.855 (-1.361)
-2.4	.997 (-0.026)	-10.0	.95 (-0.447)	-17.6	.852 (-1.393)
-2.6	.997 (-0.03)	-10.2	.948 (-0.465)	-17.8	.849 (-1.425)
-2.8	.996 (-0.035)	-10.4	.946 (-0.483)	-18.0	.846 (-1.457)
-3.0	.995 (-0.04)	-10.6	.944 (-0.502)	-18.2	.842 (-1.49)
-3.2	.995 (-0.046)	-10.8	.942 (-0.521)	-18.4	.839 (-1.524)
-3.4	.994 (-0.052)	-11.0	.94 (-0.541)	-18.6	.836 (-1.557)
-3.6	.993 (-0.058)	-11.2	.937 (-0.561)	-18.8	.833 (-1.591)
-3.8	.993 (-0.064)	-11.4	.935 (-0.581)	-19.0	.829 (-1.626)
-4.0	.992 (-0.071)	-11.6	.933 (-0.602)	-19.2	.826 (-1.661)
-4.2	.991 (-0.079)	-11.8	.931 (-0.623)	-19.4	.823 (-1.696)

## Systems With Reliability

Page 2 of 3

CLIENT: W261AX  
 ANTENNA TYPE: FMEC-2  
 FREQUENCY: 100.1 MHz  
 PATTERN POL.: Circular  
 DIRECTIVITY(Peak): 1.39/1.43 dBd  
 DIRECTIVITY(Horiz): 1.39/1.43 dBd

Date: 7/16/2012

Beam Tilt (Deg.): 0  
 Null Fill(s)(%): 0, 0, 0



## Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.819 (-1.731)	-27.2	.678 (-3.373)	-54.0	.186 (-14.615)
-19.8	.816 (-1.767)	-27.4	.674 (-3.424)	-55.0	.173 (-15.254)
-20.0	.812 (-1.804)	-27.6	.67 (-3.476)	-56.0	.16 (-15.914)
-20.2	.809 (-1.84)	-27.8	.666 (-3.528)	-57.0	.148 (-16.597)
-20.4	.806 (-1.877)	-28.0	.662 (-3.58)	-58.0	.136 (-17.304)
-20.6	.802 (-1.915)	-28.2	.658 (-3.633)	-59.0	.125 (-18.036)
-20.8	.799 (-1.953)	-28.4	.654 (-3.686)	-60.0	.115 (-18.794)
-21.0	.795 (-1.991)	-28.6	.65 (-3.739)	-61.0	.105 (-19.581)
-21.2	.792 (-2.03)	-28.8	.646 (-3.793)	-62.0	.096 (-20.397)
-21.4	.788 (-2.069)	-29.0	.642 (-3.848)	-63.0	.087 (-21.245)
-21.6	.784 (-2.108)	-29.2	.638 (-3.903)	-64.0	.078 (-22.126)
-21.8	.781 (-2.148)	-29.4	.634 (-3.958)	-65.0	.07 (-23.044)
-22.0	.777 (-2.188)	-29.6	.63 (-4.014)	-66.0	.063 (-24)
-22.2	.774 (-2.229)	-29.8	.626 (-4.07)	-67.0	.056 (-24.997)
-22.4	.77 (-2.27)	-30.0	.622 (-4.126)	-68.0	.05 (-26.039)
-22.6	.766 (-2.311)	-31.0	.601 (-4.416)	-69.0	.044 (-27.13)
-22.8	.763 (-2.353)	-32.0	.581 (-4.716)	-70.0	.039 (-28.274)
-23.0	.759 (-2.395)	-33.0	.561 (-5.027)	-71.0	.034 (-29.475)
-23.2	.755 (-2.438)	-34.0	.54 (-5.349)	-72.0	.029 (-30.74)
-23.4	.752 (-2.481)	-35.0	.52 (-5.683)	-73.0	.025 (-32.074)
-23.6	.748 (-2.524)	-36.0	.50 (-6.029)	-74.0	.021 (-33.487)
-23.8	.744 (-2.568)	-37.0	.479 (-6.387)	-75.0	.018 (-34.986)
-24.0	.74 (-2.612)	-38.0	.459 (-6.756)	-76.0	.015 (-36.583)
-24.2	.737 (-2.657)	-39.0	.44 (-7.138)	-77.0	.012 (-38.292)
-24.4	.733 (-2.701)	-40.0	.42 (-7.533)	-78.0	.01 (-40.128)
-24.6	.729 (-2.747)	-41.0	.401 (-7.941)	-79.0	.008 (-42.113)
-24.8	.725 (-2.793)	-42.0	.382 (-8.362)	-80.0	.006 (-44.272)
-25.0	.721 (-2.839)	-43.0	.363 (-8.797)	-81.0	.005 (-46.639)
-25.2	.717 (-2.885)	-44.0	.345 (-9.246)	-82.0	.003 (-49.26)
-25.4	.713 (-2.932)	-45.0	.327 (-9.71)	-83.0	.002 (-52.199)
-25.6	.71 (-2.98)	-46.0	.309 (-10.188)	-84.0	.002 (-55.546)
-25.8	.706 (-3.027)	-47.0	.292 (-10.682)	-85.0	.001 (-59.44)
-26.0	.702 (-3.076)	-48.0	.276 (-11.191)	-86.0	.001 (-64.112)
-26.2	.698 (-3.124)	-49.0	.259 (-11.717)	-87.0	.00 (-69.988)
-26.4	.694 (-3.173)	-50.0	.244 (-12.26)	-88.0	.00 (-78.01)
-26.6	.69 (-3.223)	-51.0	.229 (-12.821)	-89.0	.00 (-91.156)
-26.8	.686 (-3.272)	-52.0	.214 (-13.4)	-90.0	.00 (-50)
-27.0	.682 (-3.323)	-53.0	.20 (-13.998)	90.0	.00 (-50)

## Systems With Reliability

Page 3 of 3

CLIENT: W261AX  
 ANTENNA TYPE: FMEC-2  
 FREQUENCY: 100.1 MHz  
 PATTERN POL.: Circular  
 DIRECTIVITY(Peak): 1.39/1.43 dBd  
 DIRECTIVITY(Horiz): 1.39/1.43 dBd

Date: 7/16/2012

Beam Tilt (Deg.) : 0  
 Null Fill(s)(%) : 0, 0, 0