APPLICATION FOR CONSTRUCTION PERMIT

PROPOSED NEW FM TRANSLATOR STATION
QUINCY, ILLINOIS
FACILITY ID: 138447
94.9 MHZ / 0.027 KW ERP / ND

COMMUNITY BROADCASTING, INC.

JUNE, 2013

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APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Community Broadcasting, Inc.** ("CBI"), applicant for a new FM translator station to serve Quincy, Illinois, and are in support of their application for construction permit.[1]

This application is being filed as the long-form application for the short-form engineering proposal submitted by CBI during the Commission's 2003 Translator Auction 83 window. The original short-form proposal was assigned FCC File No. BNPFT-20030312AUS. Upon initial review of the proposal, the Staff determined that the CBI proposal was mutually exclusive with several other applications. During the 2013 settlement window, CBI submitted an amendment to the original short-form proposal, which eliminated the mutual exclusivities. The technical parameters proposed under this long-form application are identical to those proposed under the recent settlement amendment.

The proposed facility would operate on channel 235 with a maximum effective radiated power of 27 Watts at a center of radiation of 228.2 meters AMSL. At this height, the center of radiation would be 85.7 meters above average terrain. The average terrain is defined by the 330 degree true radial, on which the average terrain is 142.5 meters AMSL. The average terrain on this radial was determined through the application of the NGDC 30-second linearly interpolated terrain database. The translator would not be a fill-in translator as the 60 dBu contour of the translator would lie outside the 60 dBu service contour of KSIV-FM, the primary facility. The proposed effective radiated power is consistent with the table in Section 74.1235. Exhibit E-1

[1] The Facility ID for NEW at Quincy, Illinois is 138447.

illustrates the 60 dBu service contour of the proposed translator along with the 60 dBu service contour of the primary facility.

The proposed facility would not preclude LPFM licensing opportunities in any of the Appendix A markets. The two closest Appendix A markets to the proposed facility are the St. Louis and Quad Cities markets. Exhibit E-2 illustrates the site location relative to these two markets. As this map demonstrates, the proposed site location is outside the grid buffer of both.

The proposed facility would comply with the interference protection requirements of Section 74.1204 of the Commission's Rules. Exhibit E-3 is a tabular allocation study for the proposed facility. As this study demonstrates, the proposed facility would meet all contour overlap requirements to all proposed and authorized facilities with the exception of KOKX-FM at Keokuk, Iowa.[2] Exhibit E-4 illustrates this study in graphical contour form.

Although normally prohibited contour overlap between the proposed facility and KOKX-FM at Keokuk, Iowa would occur, there is no actual interference predicted to occur to any populated areas. Exhibit E-5 illustrates the location of the proposed site along with the 68.1 dBu F(50,50) service contour of KOKX-FM.

Interference to KOXK-FM would be predicted to occur when the field strength from the translator is at least 40 dBu above the field strength of KOKX-FM. The field strength at which interference to KOKX-FM would occur is therefore 108.1 dBu.

[2] The Facility ID for KOKX-FM at Keokuk, Iowa is 70573.

The power density for the proposed facility at a field strength of 108.1 dBu is given by the following equation:

$$\boldsymbol{S = \frac{E^2}{Z_0} = \frac{(0.25119)^2}{377} = 0.0001674}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 108.1 dBu is 0.25119 Volts per meter, and Z_0 is the characteristic impedance of free space of 377 ohms.

The power density is also given by:

$$\boldsymbol{S = \frac{P}{4\pi R^2}}$$

Where S is the same units, P is the power in Watts (27 Watts in this case), and R is the distance from the antenna. Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

$$\boldsymbol{R^2 = \frac{P}{4\pi S}}$$

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-6. The data in this exhibit is based on the use of a non-directional antenna. In addition to the tabular data in Exhibit E-6, several graphs are included, which graphically illustrate the interference situation for a given azimuth slice. As indicated on the form pages, a Shively model 6812B-2 antenna is proposed for use by the facility. The relative field value listed at the various depression angles is based on the published data for this antenna, and was obtained from the Shively web page.

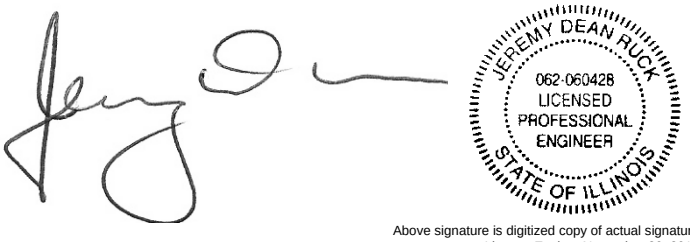
The resulting radii values indicate the volume in which interference is potentially predicted to occur relative to the center of radiation of the antenna. As the values and tables indicate, this interference area is confined to a volume located greater than 6.5 meters above ground level.

The satellite image above illustrates the location of the proposed tower site along with the buildings and structures in the vicinity. The next image is a street level shot of the structure and the surrounding area. From these two images, it can be reasonably inferred that there are no populated areas at 6.5 meters or higher above ground level in the immediate vicinity of the structure.

The proposed facility would not result in a significant environmental impact, and is exempt from environmental processing. The addition of the translator antenna would not increase the existing environmental impact already present from the structure. In addition, the translator would not constitute an RF exposure hazard to the general public. The Commission's *FM Model* software package predicts a maximum power density of 0.16 $\mu W/cm^2$ at a distance of 24 meters.

CBI certifies that it will coordinate with all other users of the site to ensure that workers and other personnel having access to the site are protected from levels of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2013

Jeremy D. Ruck, PE
August 27, 2013

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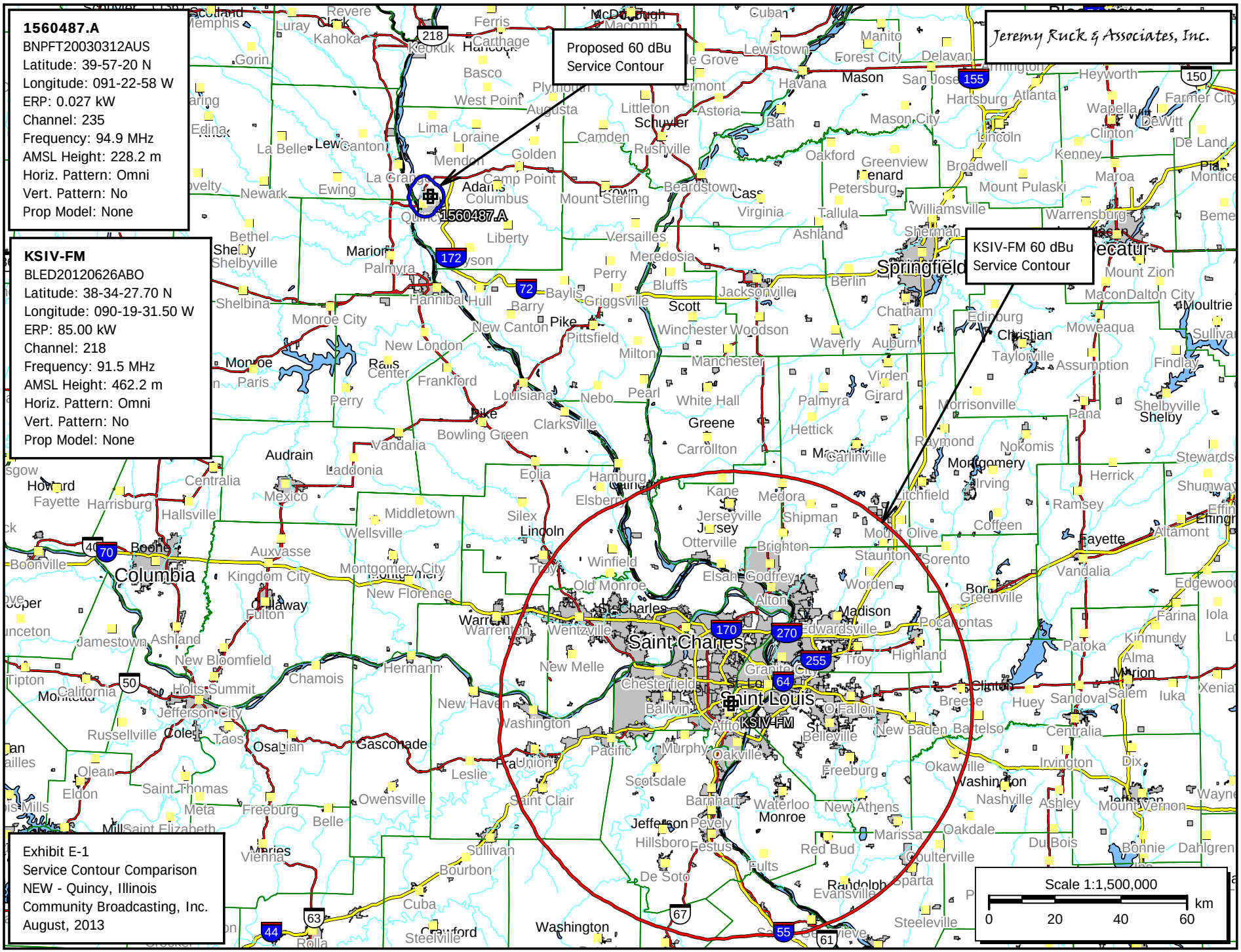
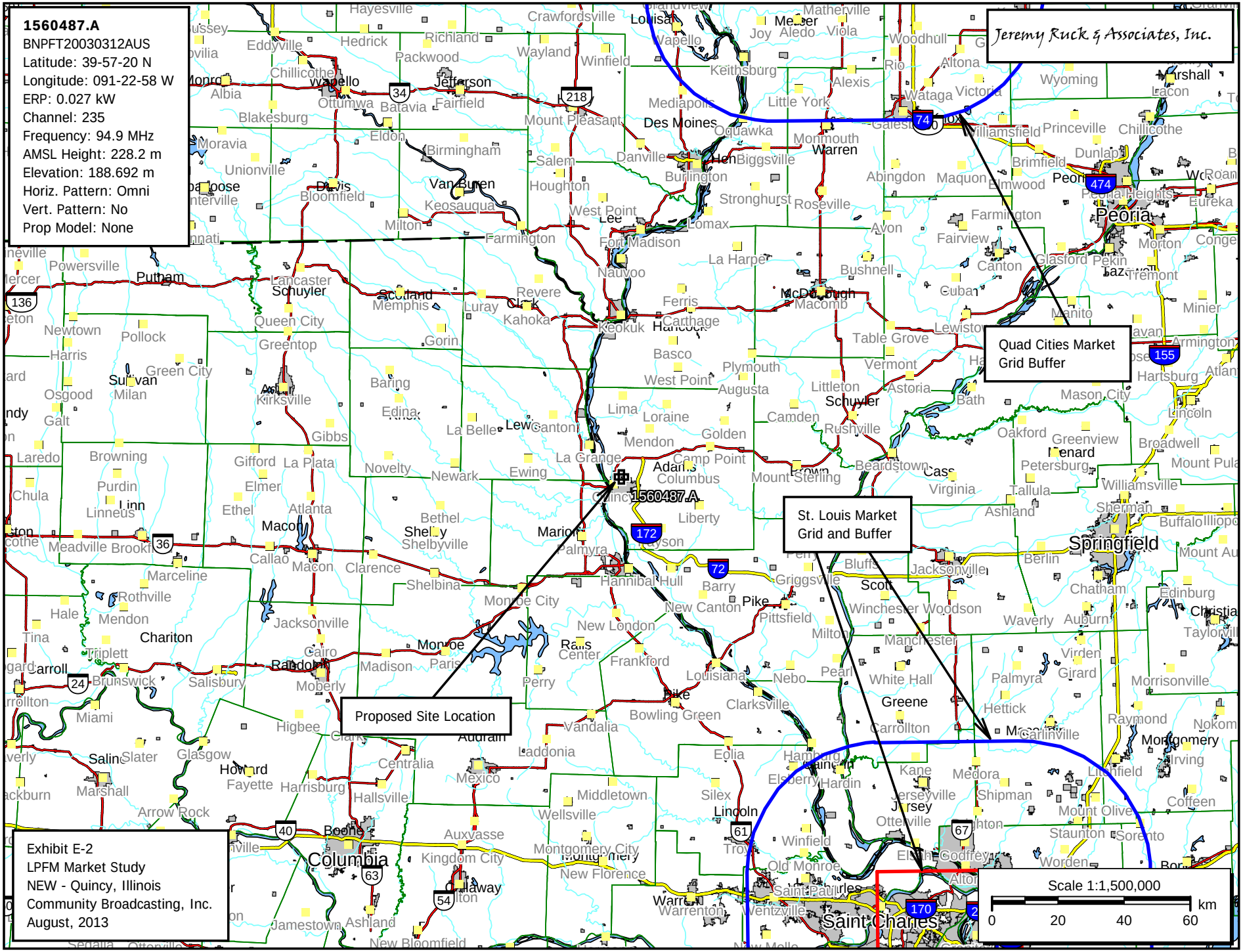

1560487.A
BNPFT20030312AUS
Latitude: 39-57-20 N
Longitude: 091-22-58 W
ERP: 0.027 kW
Channel: 235
Frequency: 94.9 MHz
AMSL Height: 228.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
KSIV-FM
BLED20120626ABO
Latitude: 38-34-27.70 N
Longitude: 090-19-31.50 W
ERP: 85.00 kW
Channel: 218
Frequency: 91.5 MHz
AMSL Height: 462.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Proposed 60 dBu Service Contour
KSIV-FM 60 dBu Service Contour
Jeremy Ruck & Associates, Inc.
1560487.A
KSIV-FM
Saint Louis
Saint Charles
Columbia
Springfield
Scale 1:1,500,000
0 20 40 60 km
Exhibit E-1
Service Contour Comparison
NEW - Quincy, Illinois
Community Broadcasting, Inc.
August, 2013


1560487.A
BNPFT20030312AUS
Latitude: 39-57-20 N
Longitude: 091-22-58 W
ERP: 0.027 kW
Channel: 235
Frequency: 94.9 MHz
AMSL Height: 228.2 m
Elevation: 188.692 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Jeremy Ruck & Associates, Inc.
Quad Cities Market
Grid Buffer
St. Louis Market
Grid and Buffer
Proposed Site Location
1560487.A
Exhibit E-2
LPFM Market Study
NEW - Quincy, Illinois
Community Broadcasting, Inc.
August, 2013
Scale 1:1,500,000
0 20 40 60 km
Peoria
Springfield
Columbia
Saint Charles

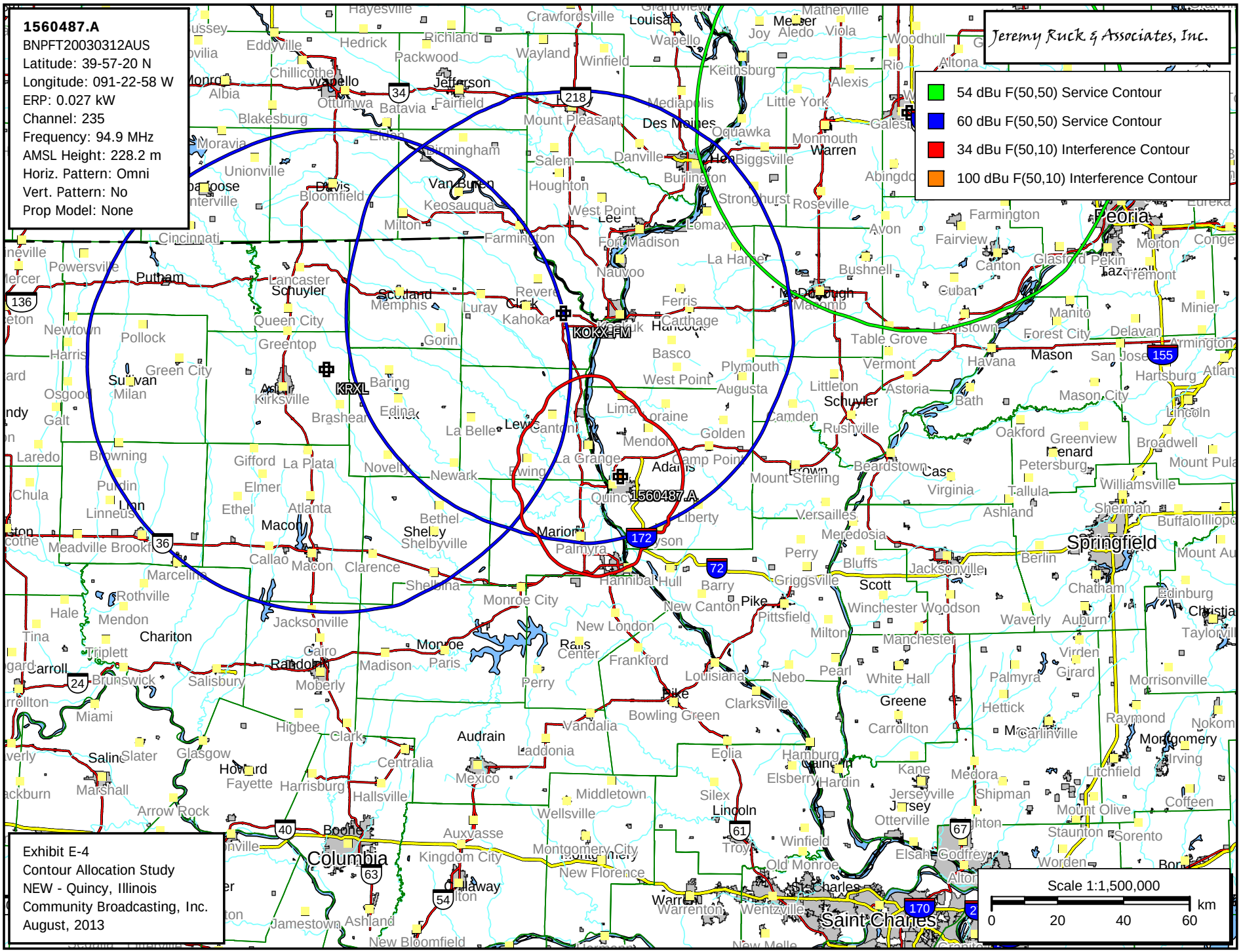
Jeremy Ruck & Associates, Inc.
Consulting Engineers - Canton, Illinois

Exhibit E-3 - Tabular Allocation Study
NEW - Quincy, Illinois

REFERENCE CH# 235D - 94.9 MHz, Pwr= 0.027 kW, HAAT= 0.0 M, COR= 229 M DISPLAY DATES
39 57 20.0 N. Average Protected F(50-50)= 4.02 km DATA 08-27-13
91 22 58.0 W. Omni-directional SEARCH 08-27-13

CH CALL / CITY	TYPE ANT / STATE	AZI <--	DIST / FILE #	LAT / LNG	PWR(kW) / HAAT(M)	INT(km) / COR(M)	PRO(km) / LICENSEE	*IN* (Overlap in km)	*OUT*
235D 1560487	APP _C_	0.0	0.00	39 57 20.0	0.027	18.0	5.5	-23.5*	-23.5*
Quincy	IL	0.0	BNPFT20030312AUS	91 22 58.0		229	Community Broadcasting, In		
237C1 KOKX-FM	LIC _C_	340.8	52.36	40 24 01.0	100.000	9.7	70.3	35.8	-18.3*
Keokuk	IA	160.7	BLH19990412KB	91 35 09.0	245	424	W. Russell Withers, Jr.		
235B WAAG	LIC _C_	38.3	140.59	40 56 34.0	50.000	137.6	64.9	-1.3	56.9
Galesburg	IL	219.0	BLH20010615AMM	90 20 39.0	150	375	Galesburg Broadcasting Com		
233C KRXL	LIC _CY	290.1	94.47	40 14 34.0	100.000	10.5	74.4	77.1	20.0
Kirksville	MO	109.4	BLH19900604KE	92 25 42.0	308	578	Kirx, Inc.		

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside protected contour.


1560487.A
BNPFT20030312AUS
Latitude: 39-57-20 N
Longitude: 091-22-58 W
ERP: 0.027 kW
Channel: 235
Frequency: 94.9 MHz
AMSL Height: 228.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Jeremy Ruck & Associates, Inc.
54 dBu F(50,50) Service Contour
60 dBu F(50,50) Service Contour
34 dBu F(50,10) Interference Contour
100 dBu F(50,10) Interference Contour
KOKX-FM
KRXL
1560487.A
Exhibit E-4
Contour Allocation Study
NEW - Quincy, Illinois
Community Broadcasting, Inc.
August, 2013
Scale 1:1,500,000
0 20 40 60 km

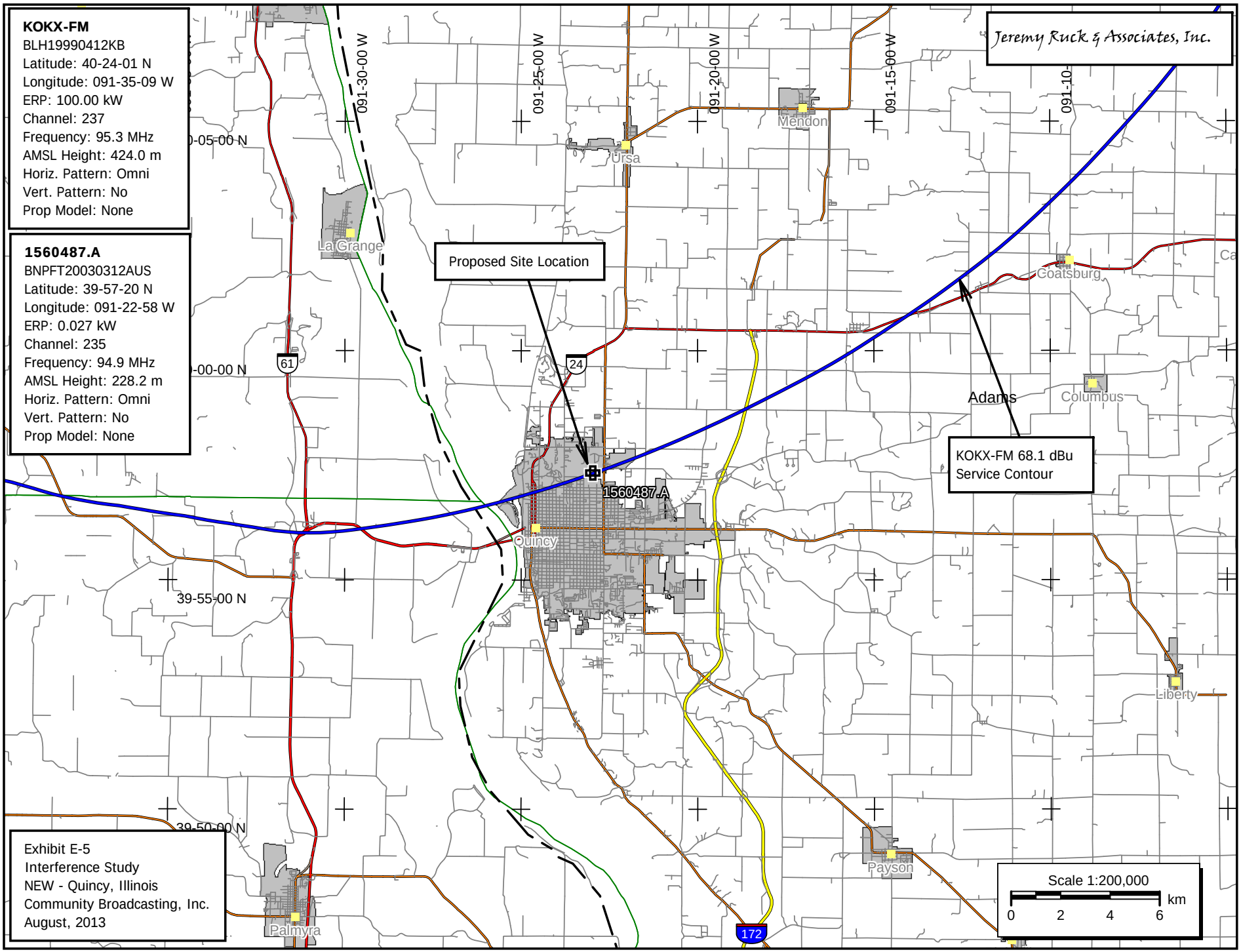
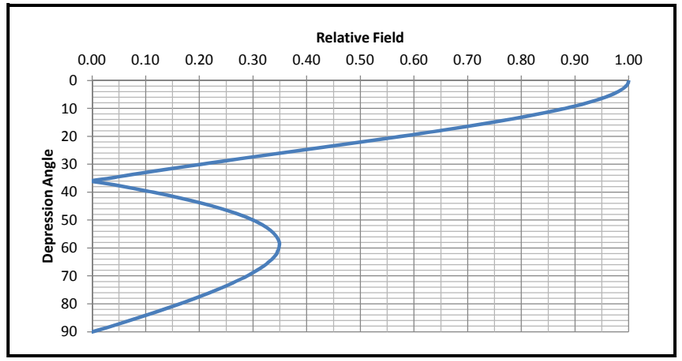
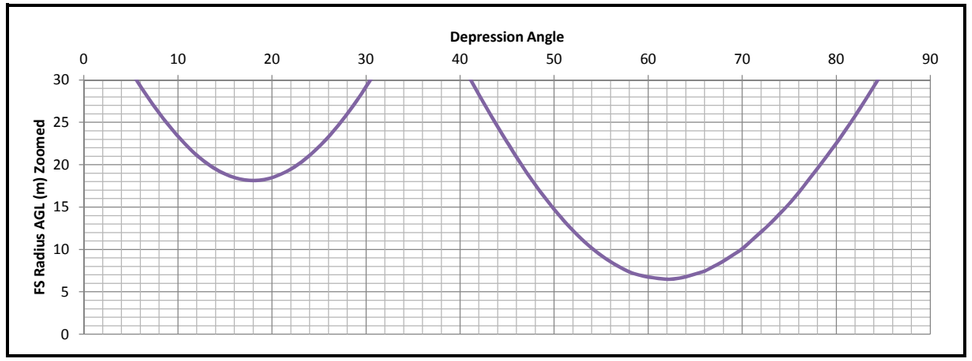
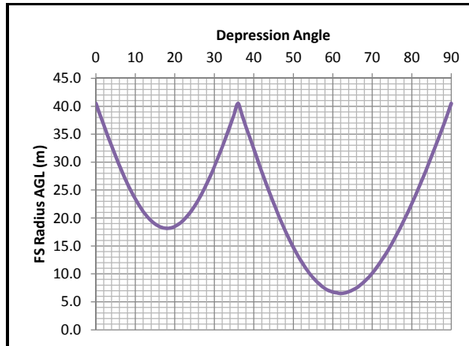
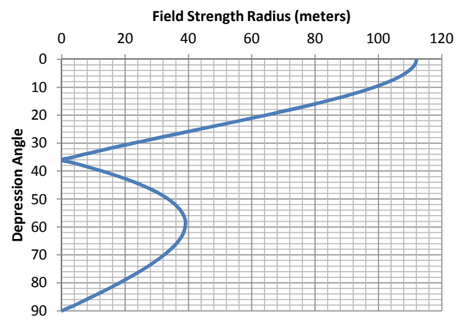
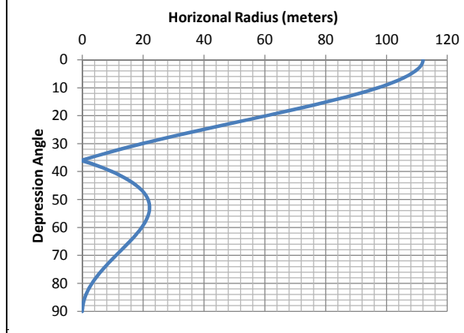
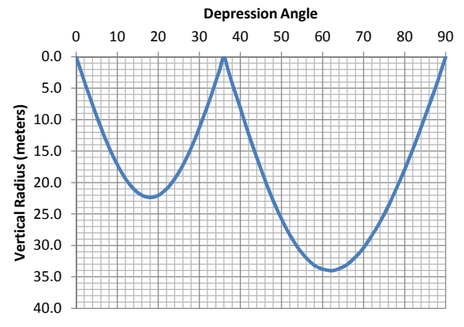
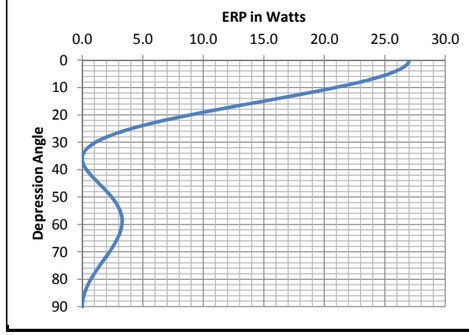
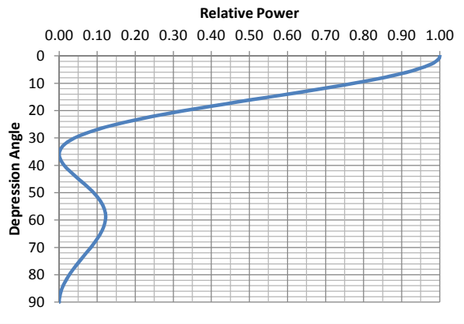

KOKX-FM
BLH19990412KB
Latitude: 40-24-01 N
Longitude: 091-35-09 W
ERP: 100.00 kW
Channel: 237
Frequency: 95.3 MHz
AMSL Height: 424.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
1560487.A
BNPFT20030312AUS
Latitude: 39-57-20 N
Longitude: 091-22-58 W
ERP: 0.027 kW
Channel: 235
Frequency: 94.9 MHz
AMSL Height: 228.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Exhibit E-5
Interference Study
NEW - Quincy, Illinois
Community Broadcasting, Inc.
August, 2013
Jeremy Ruck & Associates, Inc.
Proposed Site Location
KOKX-FM 68.1 dBu
Service Contour
1560487.A
091-30-00 W
091-25-00 W
091-20-00 W
091-15-00 W
091-10-
39-55-00 N
39-50-00 N
Quincy
Mendon
Ursa
La Grange
Palmyra
Payson
Adams
Columbus
Coatsburg
Liberty
61
24
172
Scale 1:200,000
km
0
2
4
6

Exhibit E-6
Translator Proximity Interference Analysis
NEW - Quincy, Illinois

Antenna No:	2	Center of Radiation:	40.5 m AGL
Manufacturer:	Shively	Effective Radiated Power:	27 Watts
Model:	6812B-2	FS Contour:	108.1 dBu
Number of Bays:	2	E Field Strength:	0.25410 V/m
Bay Spacing:	Lambda	Z0 (Ohms):	377 Ohms
		Power Density:	0.000171261 W/m^2





Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	27.00	112.01	112.01	0.00	40.50
1	0.9990	0.9980	26.95	111.90	111.88	1.95	38.55
2	0.9950	0.9900	26.73	111.45	111.38	3.89	36.61
3	0.9890	0.9781	26.41	110.78	110.62	5.80	34.70
4	0.9800	0.9604	25.93	109.77	109.50	7.66	32.84
5	0.9690	0.9390	25.35	108.54	108.12	9.46	31.04
6	0.9560	0.9139	24.68	107.08	106.49	11.19	29.31
7	0.9400	0.8836	23.86	105.29	104.50	12.83	27.67
8	0.9230	0.8519	23.00	103.38	102.38	14.39	26.11
9	0.9030	0.8154	22.02	101.14	99.90	15.82	24.68
10	0.8810	0.7762	20.96	98.68	97.18	17.14	23.36
11	0.8570	0.7344	19.83	95.99	94.23	18.32	22.18
12	0.8320	0.6922	18.69	93.19	91.15	19.38	21.12
13	0.8040	0.6464	17.45	90.05	87.75	20.26	20.24
14	0.7750	0.6006	16.22	86.81	84.23	21.00	19.50
15	0.7450	0.5550	14.99	83.45	80.60	21.60	18.90
16	0.7130	0.5084	13.73	79.86	76.77	22.01	18.49
17	0.6800	0.4624	12.48	76.17	72.84	22.27	18.23
18	0.6460	0.4173	11.27	72.36	68.82	22.36	18.14
19	0.6110	0.3733	10.08	68.44	64.71	22.28	18.22
20	0.5750	0.3306	8.93	64.40	60.52	22.03	18.47
21	0.5380	0.2894	7.81	60.26	56.26	21.60	18.90
22	0.5010	0.2510	6.78	56.12	52.03	21.02	19.48
23	0.4640	0.2153	5.81	51.97	47.84	20.31	20.19
24	0.4260	0.1815	4.90	47.72	43.59	19.41	21.09
25	0.3880	0.1505	4.06	43.46	39.39	18.37	22.13
26	0.3510	0.1232	3.33	39.31	35.34	17.23	23.27
27	0.3130	0.0980	2.65	35.06	31.24	15.92	24.58
28	0.2760	0.0762	2.06	30.91	27.30	14.51	25.99
29	0.2390	0.0571	1.54	26.77	23.41	12.98	27.52
30	0.2020	0.0408	1.10	22.63	19.59	11.31	29.19
31	0.1660	0.0276	0.74	18.59	15.94	9.58	30.92
32	0.1310	0.0172	0.46	14.67	12.44	7.78	32.72
33	0.0970	0.0094	0.25	10.86	9.11	5.92	34.58
34	0.0630	0.0040	0.11	7.06	5.85	3.95	36.55
35	0.0310	0.0010	0.03	3.47	2.84	1.99	38.51
36	0.0000	0.0000	0.00	0.00	0.00	0.00	40.50
37	0.0310	0.0010	0.03	3.47	2.77	2.09	38.41
38	0.0600	0.0036	0.10	6.72	5.30	4.14	36.36
39	0.0870	0.0076	0.20	9.74	7.57	6.13	34.37
40	0.1140	0.0130	0.35	12.77	9.78	8.21	32.29
41	0.1390	0.0193	0.52	15.57	11.75	10.21	30.29
42	0.1630	0.0266	0.72	18.26	13.57	12.22	28.28
43	0.1850	0.0342	0.92	20.72	15.15	14.13	26.37
44	0.2060	0.0424	1.15	23.07	16.60	16.03	24.47
45	0.2250	0.0506	1.37	25.20	17.82	17.82	22.68

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.2250	0.0506	1.37	25.20	17.82	17.82	22.68
46	0.2430	0.0590	1.59	27.22	18.91	19.58	20.92
47	0.2600	0.0676	1.83	29.12	19.86	21.30	19.20
48	0.2750	0.0756	2.04	30.80	20.61	22.89	17.61
49	0.2880	0.0829	2.24	32.26	21.16	24.35	16.15
50	0.3000	0.0900	2.43	33.60	21.60	25.74	14.76
51	0.3110	0.0967	2.61	34.83	21.92	27.07	13.43
52	0.3200	0.1024	2.76	35.84	22.07	28.24	12.26
53	0.3280	0.1076	2.90	36.74	22.11	29.34	11.16
54	0.3350	0.1122	3.03	37.52	22.06	30.36	10.14
55	0.3400	0.1156	3.12	38.08	21.84	31.20	9.30
56	0.3440	0.1183	3.20	38.53	21.55	31.94	8.56
57	0.3470	0.1204	3.25	38.87	21.17	32.60	7.90
58	0.3490	0.1218	3.29	39.09	20.71	33.15	7.35
59	0.3490	0.1218	3.29	39.09	20.13	33.51	6.99
60	0.3480	0.1211	3.27	38.98	19.49	33.76	6.74
61	0.3460	0.1197	3.23	38.75	18.79	33.90	6.60
62	0.3440	0.1183	3.20	38.53	18.09	34.02	6.48
63	0.3400	0.1156	3.12	38.08	17.29	33.93	6.57
64	0.3350	0.1122	3.03	37.52	16.45	33.73	6.77
65	0.3290	0.1082	2.92	36.85	15.57	33.40	7.10
66	0.3230	0.1043	2.82	36.18	14.72	33.05	7.45
67	0.3150	0.0992	2.68	35.28	13.79	32.48	8.02
68	0.3070	0.0942	2.54	34.39	12.88	31.88	8.62
69	0.2980	0.0888	2.40	33.38	11.96	31.16	9.34
70	0.2890	0.0835	2.26	32.37	11.07	30.42	10.08
71	0.2780	0.0773	2.09	31.14	10.14	29.44	11.06
72	0.2670	0.0713	1.92	29.91	9.24	28.44	12.06
73	0.2560	0.0655	1.77	28.67	8.38	27.42	13.08
74	0.2440	0.0595	1.61	27.33	7.53	26.27	14.23
75	0.2320	0.0538	1.45	25.99	6.73	25.10	15.40
76	0.2190	0.0480	1.29	24.53	5.93	23.80	16.70
77	0.2050	0.0420	1.13	22.96	5.17	22.37	18.13
78	0.1910	0.0365	0.98	21.39	4.45	20.93	19.57
79	0.1770	0.0313	0.85	19.83	3.78	19.46	21.04
80	0.1630	0.0266	0.72	18.26	3.17	17.98	22.52
81	0.1480	0.0219	0.59	16.58	2.59	16.37	24.13
82	0.1330	0.0177	0.48	14.90	2.07	14.75	25.75
83	0.1170	0.0137	0.37	13.10	1.60	13.01	27.49
84	0.1010	0.0102	0.28	11.31	1.18	11.25	29.25
85	0.0850	0.0072	0.20	9.52	0.83	9.48	31.02
86	0.0690	0.0048	0.13	7.73	0.54	7.71	32.79
87	0.0520	0.0027	0.07	5.82	0.30	5.82	34.68
88	0.0360	0.0013	0.03	4.03	0.14	4.03	36.47
89	0.0180	0.0003	0.01	2.02	0.04	2.02	38.48
90	0.0000	0.0000	0.00	0.00	0.00	0.00	40.50