

Comprehensive Technical Exhibit
Request for Special Temporary Authority
K209EC - Kansas City, Missouri
Community Broadcasting, Inc.
June, 2011

Request for Special Temporary Authority

The following engineering statement and attached exhibits have been prepared for **Community Broadcasting, Inc. ("CBI")**, licensee of FM translator station K209EC at Kansas City, Missouri, and are in support of their request for Special Temporary Authority.¹

K209EC has been silent since June 29, 2010. This translator was acquired by CBI from Pensacola Christian College. The transfer of the license to CBI was requested following an upgrade to KJCV-FM, a CBI facility, licensed to Country Club Village, Missouri.² KJCV-FM also operates on channel 209, and is sufficiently close to the coverage area of K209EC, that interference from the translator would have interfered with the upgraded KJCV-FM facility.

CBI did not acquire the rights to the tower lease that was previously in effect for K209EC at the site specified in the license for that facility. Since the time of the acquisition, CBI has been working to identify and utilize another site for the translator, however, to this date; it has been unable to gain reasonable site assurance to effect a relocation of the license to a different location.

CBI is also the licensee of FM translator station K205ER at Raytown, Missouri.³ The licensed site for K205ER is in close proximity to that of K209EC. In fact, the two translators cover essentially the same area. CBI has no technical need to justify two translators covering nearly identical regions of the Kansas City, hence the desire to relocate the translator to another region with the metropolitan area.

¹ The Facility ID for K209EC at Kansas City, MO is 92765.

² The Facility ID for KJCV-FM at Country Club, Missouri is 89276.

³ The Facility ID for K205ER at Raytown, Missouri is 123128.

In order to preserve the K209EC license from automatic cancellation on June 29, CBI respectfully requests a grant of this Special Temporary Authority. This STA request seeks to co-locate with K205ER on a temporary basis. CBI is currently working to identify and procure a site that can be utilized by the translator facility on a permanent basis. A grant of this request would be in the public interest, as it would prevent the automatic cancellation of the K209EC license, and accommodate the relocation of the facility in order to provide a stable, usable signal.

The technical facilities proposed in this request would be in compliance with the applicable provisions of the Commission's Rules. In Exhibits E-1 and E-2, a comparison between the licensed 60 dBu service contour and the proposed 60 dBu service contour is made. As these maps demonstrate, the predicted 60 dBu service contour resulting from the proposed STA facilities lie wholly within the 60 dBu service contour determined by the licensed K209EC parameters.⁴

The proposed facility would comply with the interference provisions of Section 74.1204 of the Commission's Rules. Exhibit E-3 tabulates the contour allocation situation for the proposed STA facility. As this exhibit demonstrates, the proposed STA facility would have contour overlap with KCUR-FM and KKFI. It can be reasonably inferred from the low ERP proposed that the proposed translator is not predicted to cause actual interference to either of these facilities.⁵

Exhibit E-4 depicts the KCUR-FM and KKFI service contours in the vicinity of the proposed K209EC STA site. As illustrated, the KCUR-FM 126 dBu contour passes through the site, as does

⁴ See FCC File No. BLFT-20031210ACS.

⁵ Due to the very small distance to contour for the 100 dBu F(50,10) contour for both facilities, a graphical allocation map will be omitted from this engineering statement. Similarly, a Longley-Rice study is also omitted, as it will clearly indicate no interference due to the high ERP of KKFI and KCUR-FM coupled with the proximity to the main station.

the KKFI 127 dBu contour. Thus, interference is defined to exist when the field strength from the translator exceeds 166 dBu. For the purposes of simplicity, the assumption will be made that the interference level of 166 dBu is valid for both FM facilities.

The power density for the proposed facility at a field strength of 166 dBu is given by the following equation:

$$S = \frac{E^2}{Z_0} = \frac{(199.5)^2}{377} = 105.6 \quad \text{Eq. 1}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 166 dBu is 105.6 Volts per meter, and Z_0 is the characteristic impedance of free space of 377 Ohms.

The power density is also given by:

$$S = \frac{P}{4\pi R^2} \quad \text{Eq. 2}$$

Where S is in the same units, P is the power in Watts (8 in this case), and R is the distance. Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

$$R^2 = \frac{P}{4\pi S} \quad \text{Eq. 3}$$

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-5. It was assumed for these calculations that an ERI LPX-2E-HW antenna would be utilized. This antenna is assumed to be omni-directional in the horizontal plane. The relative field values at the listed depression angles are based on the published data for the antenna.

The resulting "R" or radius value from Eq. 3 corresponds to the "Field Strength Radius" column in Exhibit E-5. Since each radius is assigned to a specific depression angle, the radius has both a horizontal and vertical component to it. The specific horizontal and vertical distances from the center of radiation were derived using basic trigonometry. Depression angles where the vertical radius is less than approximate 3 meters AGL, including negative values, result in areas where interference is assumed to potentially be experienced by resident population in the area. As indicated in the tabulation, the interference area only occurs in extreme proximity to the antenna. Any imaginary three-dimensional surface where interference would occur is essentially in contact with the antenna, and in no way reaches, the ground or any populated area.

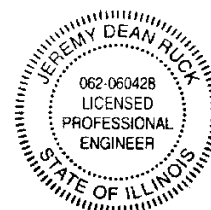
Similarly, the proposed STA facility should be exempt from environmental processing. As previously mentioned, the facility would be co-located with K205ER on an existing structure. No excavation or increase in the existing environmental impact would occur from the construction of the facility. Furthermore, the maximum effective radiated power of the transmitter is so low than an RF exposure hazard to persons at the site would not occur.

If the assumption were made that the antenna is a point source and the equations in OET Bulletin 65 are utilized, then a maximum power density at 2 meters above ground would be 0.34

$\mu\text{W}/\text{cm}^2$. This value is considerably less than the upper limit permissible under the uncontrolled environment condition. CBI will coordinate with other users of the site to reduce power or cease operation as necessary to protect workers from being exposed to levels of non-ionizing radiation in excess of the applicable safety standards.

Affidavit

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, 2011

Jeremy D. Ruck, PE
June 24, 2011

K209EC

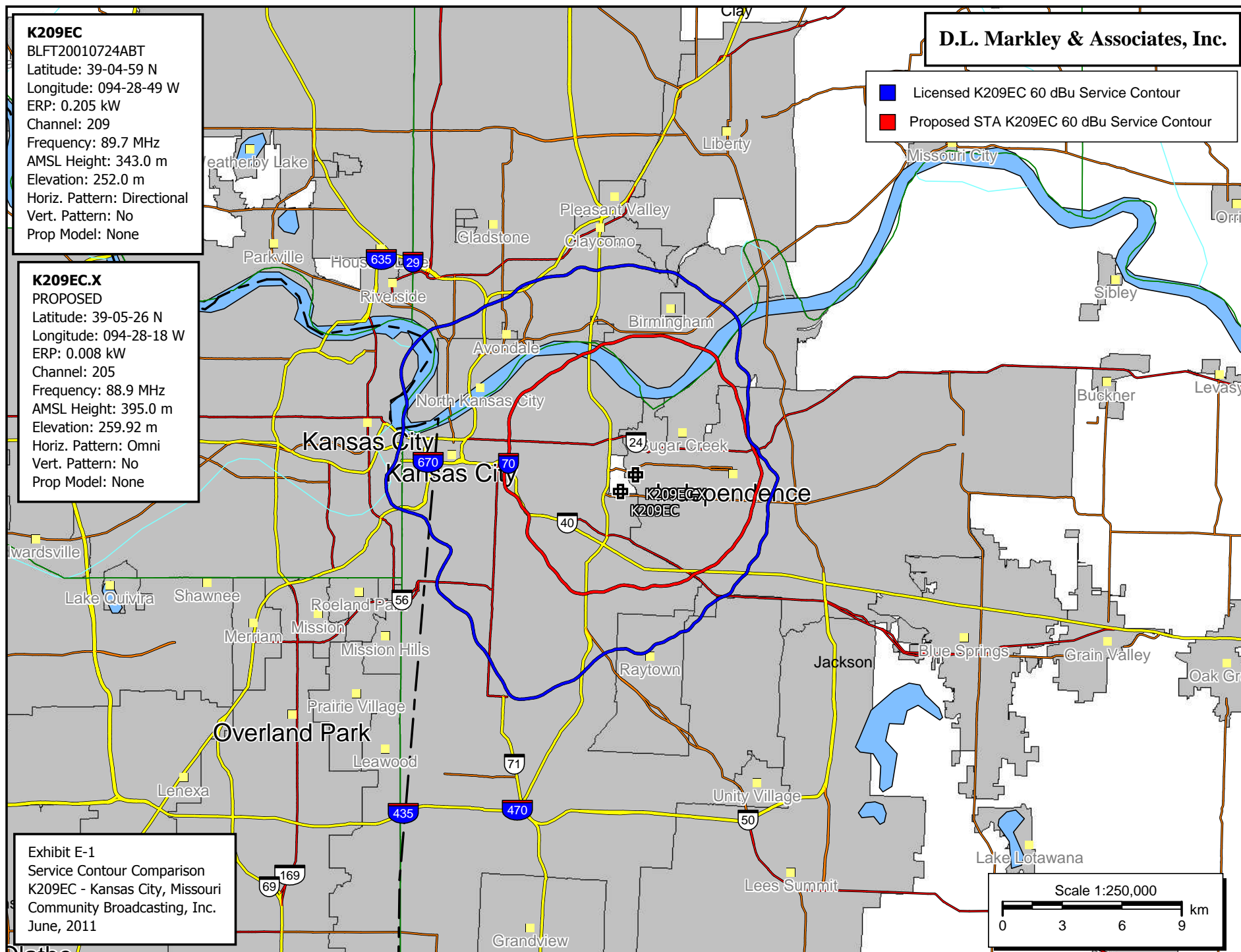
BLFT20010724ABT
Latitude: 39-04-59 N
Longitude: 094-28-49 W
ERP: 0.205 kW
Channel: 209
Frequency: 89.7 MHz
AMSL Height: 343.0 m
Elevation: 252.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

K209EC.X**PROPOSED**

Latitude: 39-05-26 N
Longitude: 094-28-18 W
ERP: 0.008 kW
Channel: 205
Frequency: 88.9 MHz
AMSL Height: 395.0 m
Elevation: 259.92 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

D.L. Markley & Associates, Inc.

- Licensed K209EC 60 dBu Service Contour
- Proposed STA K209EC 60 dBu Service Contour





K209EC

BLFT20010724ABT
Latitude: 39-04-59 N
Longitude: 094-28-49 W
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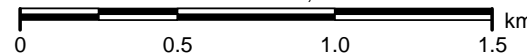
-  Licensed K209EC 60 dBu Service Contour
-  Proposed STA K209EC 60 dBu Service Contour

Licensed K209EC
60 dBu Contour

Proposed K209EC
60 dBu Contour

Exhibit E-2
Service Contour Comparison
K209EC - Kansas City, Missouri
Community Broadcasting, Inc.
June, 2011

Scale 1:24,000



D.L. Markley & Associates, Inc.
Consulting Engineers

Exhibit E-3 - Tabular Allocation Study
K209EC - Kansas City, Missouri
CH# 209D - 89.7 MHz, Pwr= 0.008 kW DA, HAAT= 137.7 M, COR= 395 M
Average Protected F(50-50)= 6.44 km
Standard Directional

REFERENCE
39 05 26.0 N.
94 28 18.0 W.

DISPLAY DATES
DATA 06-24-11
SEARCH 06-24-11

CH CITY	CALL	TYPE STATE	ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
209D Kansas City	K209EC	LIC MO	DV_	221.7 41.7	1.1 BLFT20010724ABT	39 04 59.0 94 28 49.0	0.205 81	29.0 343	8.7 Community Broadcasting, In	-34.1*	-28.2*
207C1 Kansas City	KCUR-FM	CP MO	_EX	237.2 57.2	0.0 BPED20080904APE	39 05 25.8 94 28 18.4	90.000 266	9.2 528	68.2 The Curators Of The Univer	-15.3*<	-68.4*
207C1 Kansas City	KCUR-FM	LIC MO	_CN	221.7 41.7	1.1 BMLED19920728KC	39 04 59.0 94 28 49.0	100.000 250	9.3 512	68.6 The Curators Of The Univer	-14.4*<	-67.7*
211C1 Kansas City	KKFI	LIC MO	_CN	227.0 47.0	1.0 BLED19880302KA	39 05 05.0 94 28 47.0	100.000 129	6.8 392	56.5 Mid-coast Radio Project, I	-11.9*<	-55.7*
209C2 Country Club	KJCV-FM	LIC MO	DCX	341.8 161.6	76.6 BLED20100707FCN	39 44 42.0 94 45 06.0	25.000 106	116.1 386	41.2 Community Broadcasting, In	-45.8*<	14.5
209C3 Knob Noster	KCVQ	CP MO	_CX	106.9 287.4	83.6 BPED20100518AAQ	38 52 10.0 93 32 58.0	7.700 70	86.6 296	26.5 Lake Area Educational Broa	-7.4*<	43.3
209A Knob Noster	KCVQ	LIC MO	_CN	106.9 287.4	83.6 BLED19980714KA	38 52 10.0 93 32 58.0	5.000 70	79.5 296	24.0 Lake Area Educational Broa	-0.3<	45.7
209A Paola	KWJP	CP KS	DCX	211.5 31.2	79.4 BMPED20110322AAX	38 28 49.0 94 56 53.0	4.500 68	67.8 349	20.0 Gospel To The Nations Mini	5.3	38.2
209D St. Joseph	K209CT	LIC MO	_C_	339.2 159.0	76.6 BLFT19991104ABZ	39 44 05.0 94 47 26.0	0.170 90	37.2 367	10.9 Community Broadcasting, In	33.1	44.8
209A Baldwin City	KNBU	LIC KS	_CN	241.0 60.6	71.0 BLED19920407KF	38 46 45.0 95 11 15.0	0.100 36	21.8 338	6.5 Baker University	43.1	44.1

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone = 2, Co to 3rd adjacent.
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.
Reference station has protected zone issue: AM tower

K209EC.X

Latitude: 39-05-26 N
Longitude: 094-28-18 W
ERP: 0.008 kW
Channel: 205
Frequency: 88.9 MHz
AMSL Height: 395.0 m
Elevation: 268.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

KCUR-FM

BMLED19920728KC
Latitude: 39-04-59 N
Longitude: 094-28-49 W
ERP: 100.00 kW
Channel: 207
Frequency: 89.3 MHz
AMSL Height: 512.0 m
Elevation: 251.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

KKFI

BLED19880302KA
Latitude: 39-05-05 N
Longitude: 094-28-47 W
ERP: 100.00 kW
Channel: 211
Frequency: 90.1 MHz
AMSL Height: 392.0 m
Elevation: 253.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Exhibit E-4
Interference Study
K209EC - Kansas City, Missouri
Community Broadcasting, Inc.
June, 2011

D.L. Markley & Associates, Inc.

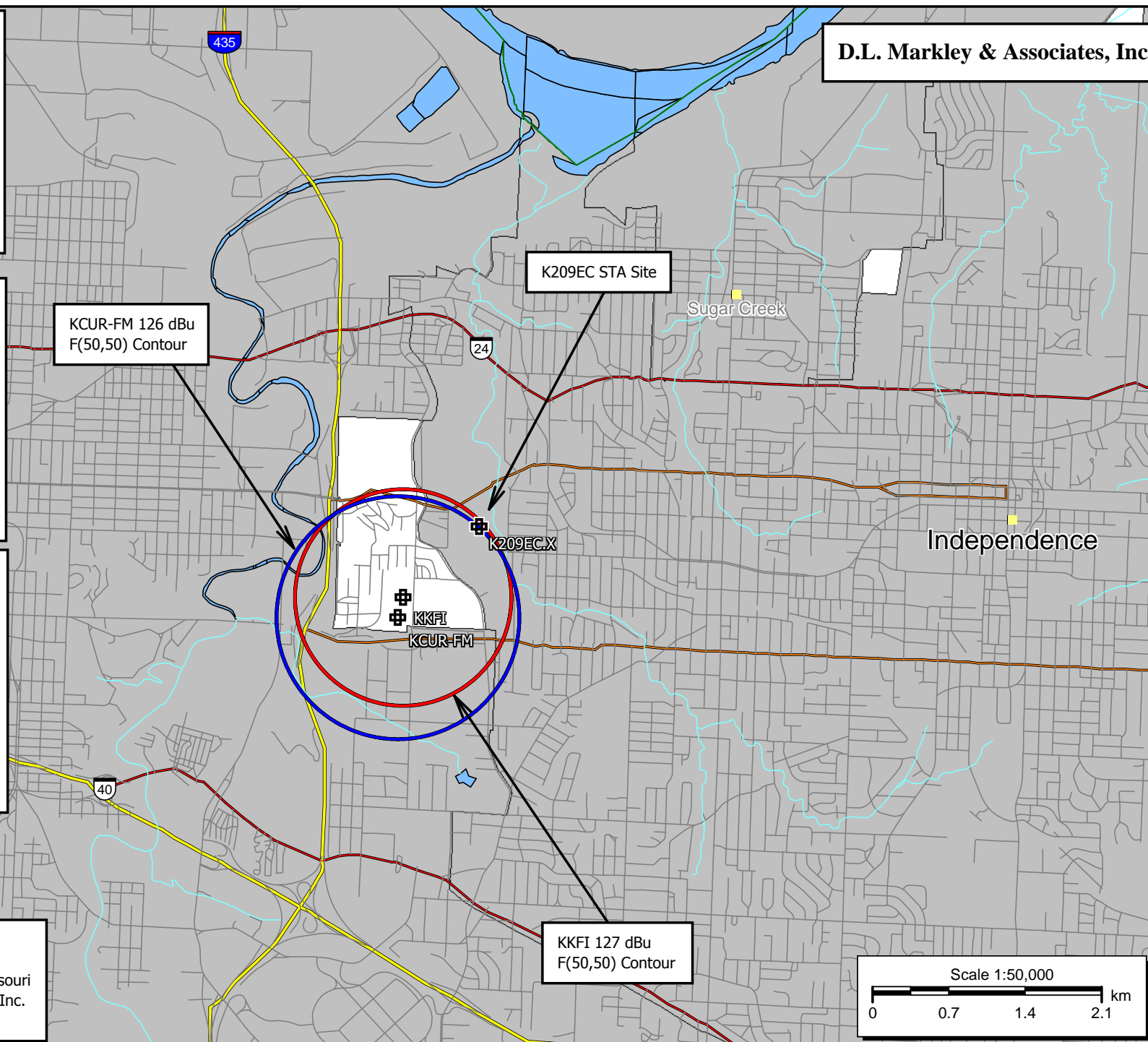


Exhibit E-5 - Summary of Power Density Calculations								
Facility:	K209EC							
COR:		127.0	m AGL				Z0 (Ohms)	377
ERP:		8	Watts				ALL distances meters	
Antenna:		SHI 6812-2						
FS Contour:		166	dBu					
E Field Strength:		199.5262	V/m					
Power Density:		105.599	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
0	1.000	1.000	8.00	0.006	0.08	0.00	127.00	0.08
1	0.999	0.998	7.98	0.006	0.08	0.00	127.00	0.08
2	0.997	0.994	7.95	0.006	0.08	0.00	127.00	0.08
3	0.994	0.988	7.90	0.006	0.08	0.00	127.00	0.08
4	0.990	0.980	7.84	0.006	0.08	0.01	126.99	0.08
5	0.984	0.968	7.75	0.006	0.08	0.01	126.99	0.08
6	0.977	0.955	7.64	0.006	0.08	0.01	126.99	0.08
7	0.969	0.939	7.51	0.006	0.08	0.01	126.99	0.07
8	0.960	0.922	7.37	0.006	0.07	0.01	126.99	0.07
9	0.949	0.901	7.20	0.005	0.07	0.01	126.99	0.07
10	0.938	0.880	7.04	0.005	0.07	0.01	126.99	0.07
11	0.925	0.856	6.85	0.005	0.07	0.01	126.99	0.07
12	0.912	0.832	6.65	0.005	0.07	0.01	126.99	0.07
13	0.897	0.805	6.44	0.005	0.07	0.02	126.98	0.07
14	0.882	0.778	6.22	0.005	0.07	0.02	126.98	0.07
15	0.865	0.748	5.99	0.005	0.07	0.02	126.98	0.06
16	0.848	0.719	5.75	0.004	0.07	0.02	126.98	0.06
17	0.830	0.689	5.51	0.004	0.06	0.02	126.98	0.06
18	0.811	0.658	5.26	0.004	0.06	0.02	126.98	0.06
19	0.792	0.627	5.02	0.004	0.06	0.02	126.98	0.06
20	0.772	0.596	4.77	0.004	0.06	0.02	126.98	0.06
21	0.751	0.564	4.51	0.003	0.06	0.02	126.98	0.05
22	0.730	0.533	4.26	0.003	0.06	0.02	126.98	0.05
23	0.709	0.503	4.02	0.003	0.06	0.02	126.98	0.05
24	0.687	0.472	3.78	0.003	0.05	0.02	126.98	0.05
25	0.665	0.442	3.54	0.003	0.05	0.02	126.98	0.05
26	0.643	0.413	3.31	0.002	0.05	0.02	126.98	0.04
27	0.621	0.386	3.09	0.002	0.05	0.02	126.98	0.04
28	0.598	0.358	2.86	0.002	0.05	0.02	126.98	0.04
29	0.576	0.332	2.65	0.002	0.04	0.02	126.98	0.04
30	0.553	0.306	2.45	0.002	0.04	0.02	126.98	0.04
31	0.530	0.281	2.25	0.002	0.04	0.02	126.98	0.04
32	0.508	0.258	2.06	0.002	0.04	0.02	126.98	0.03
33	0.486	0.236	1.89	0.001	0.04	0.02	126.98	0.03
34	0.464	0.215	1.72	0.001	0.04	0.02	126.98	0.03
35	0.442	0.195	1.56	0.001	0.03	0.02	126.98	0.03
36	0.421	0.177	1.42	0.001	0.03	0.02	126.98	0.03
37	0.400	0.160	1.28	0.001	0.03	0.02	126.98	0.02
38	0.379	0.144	1.15	0.001	0.03	0.02	126.98	0.02

Exhibit E-5 - Summary of Power Density Calculations								
Facility:	K209EC							
COR:		127.0	m AGL				Z0 (Ohms)	377
ERP:		8	Watts				ALL distances meters	
Antenna:		SHI 6812-2						
FS Contour:		166	dBu					
E Field Strength:		199.5262	V/m					
Power Density:		105.599	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
39	0.359	0.129	1.03	0.001	0.03	0.02	126.98	0.02
40	0.339	0.115	0.92	0.001	0.03	0.02	126.98	0.02
41	0.320	0.102	0.82	0.001	0.02	0.02	126.98	0.02
42	0.301	0.091	0.72	0.001	0.02	0.02	126.98	0.02
43	0.283	0.080	0.64	0.000	0.02	0.01	126.99	0.02
44	0.265	0.070	0.56	0.000	0.02	0.01	126.99	0.01
45	0.240	0.058	0.46	0.000	0.02	0.01	126.99	0.01
46	0.232	0.054	0.43	0.000	0.02	0.01	126.99	0.01
47	0.216	0.047	0.37	0.000	0.02	0.01	126.99	0.01
48	0.201	0.040	0.32	0.000	0.02	0.01	126.99	0.01
49	0.186	0.035	0.28	0.000	0.01	0.01	126.99	0.01
50	0.172	0.030	0.24	0.000	0.01	0.01	126.99	0.01
51	0.159	0.025	0.20	0.000	0.01	0.01	126.99	0.01
52	0.146	0.021	0.17	0.000	0.01	0.01	126.99	0.01
53	0.134	0.018	0.14	0.000	0.01	0.01	126.99	0.01
54	0.123	0.015	0.12	0.000	0.01	0.01	126.99	0.01
55	0.112	0.013	0.10	0.000	0.01	0.01	126.99	0.00
56	0.102	0.010	0.08	0.000	0.01	0.01	126.99	0.00
57	0.093	0.009	0.07	0.000	0.01	0.01	126.99	0.00
58	0.084	0.007	0.06	0.000	0.01	0.01	126.99	0.00
59	0.068	0.005	0.04	0.000	0.01	0.00	127.00	0.00
60	0.061	0.004	0.03	0.000	0.00	0.00	127.00	0.00
61	0.054	0.003	0.02	0.000	0.00	0.00	127.00	0.00
62	0.048	0.002	0.02	0.000	0.00	0.00	127.00	0.00
63	0.042	0.002	0.01	0.000	0.00	0.00	127.00	0.00
64	0.037	0.001	0.01	0.000	0.00	0.00	127.00	0.00
65	0.033	0.001	0.01	0.000	0.00	0.00	127.00	0.00
66	0.033	0.001	0.01	0.000	0.00	0.00	127.00	0.00
67	0.028	0.001	0.01	0.000	0.00	0.00	127.00	0.00
68	0.025	0.001	0.01	0.000	0.00	0.00	127.00	0.00
69	0.021	0.000	0.00	0.000	0.00	0.00	127.00	0.00
70	0.018	0.000	0.00	0.000	0.00	0.00	127.00	0.00
71	0.015	0.000	0.00	0.000	0.00	0.00	127.00	0.00
72	0.013	0.000	0.00	0.000	0.00	0.00	127.00	0.00
73	0.011	0.000	0.00	0.000	0.00	0.00	127.00	0.00
74	0.009	0.000	0.00	0.000	0.00	0.00	127.00	0.00
75	0.007	0.000	0.00	0.000	0.00	0.00	127.00	0.00
76	0.006	0.000	0.00	0.000	0.00	0.00	127.00	0.00
77	0.005	0.000	0.00	0.000	0.00	0.00	127.00	0.00

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Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
78	0.004	0.000	0.00	0.000	0.00	0.00	127.00	0.00
79	0.003	0.000	0.00	0.000	0.00	0.00	127.00	0.00
80	0.002	0.000	0.00	0.000	0.00	0.00	127.00	0.00
81	0.002	0.000	0.00	0.000	0.00	0.00	127.00	0.00
82	0.001	0.000	0.00	0.000	0.00	0.00	127.00	0.00
83	0.001	0.000	0.00	0.000	0.00	0.00	127.00	0.00
84	0.001	0.000	0.00	0.000	0.00	0.00	127.00	0.00
85	0.001	0.000	0.00	0.000	0.00	0.00	127.00	0.00
86	0.000	0.000	0.00	0.000	0.00	0.00	127.00	0.00
87	0.000	0.000	0.00	0.000	0.00	0.00	127.00	0.00
88	0.000	0.000	0.00	0.000	0.00	0.00	127.00	0.00
89	0.000	0.000	0.00	0.000	0.00	0.00	127.00	0.00
90	0.000	0.000	0.00	0.000	0.00	0.00	127.00	0.00