

**Comprehensive Technical Exhibit**  
*Application for Construction Permit*  
K245AE - Cedar Rapids, Iowa  
Extreme Grace Media, Inc.  
March 2012

**Application for Construction Permit**

The following engineering statement and attached exhibits have been prepared for **Extreme Grace Media, Inc.** ("XGM"), licensee of FM translator station K245AE at Cedar Rapids, Iowa, and are in support of their application for construction permit to modify that facility.<sup>1</sup>

This application seeks to change the location of the facility, the channel of operation, and the maximum effective radiated power. Associated with the change in the physical location of the facility will be appropriate changes in the elevation data associated with the facility. The proposed facility would utilize a non-directional antenna. The antenna type proposed for use by the facility is an Electronics Research, Inc. (ERI) Model 100A-4F-HW. This is a half-wave spaced antenna with four sections.

The proposed facility would operate with a maximum effective radiated power of 0.250 kW at a center of radiation of 384.1 meters above mean sea level. The current channel of operation for the facility is channel 245; however, as part of this location, XGM seeks to change to channel 298, which is removed 53 channels from the authorized channel. The primary station for the facility would be changed to KGYM at Cedar Rapids, Iowa, thus the facility will provide fill-in service for an AM facility whose coverage is greatly hampered during nighttime hours.<sup>2</sup>

Although an application to assign the K245AE license from XGM to KZIA, Inc. ("KZIA") is currently on file, XGM holds a valid retransmit agreement with KZIA, Inc. for KGYM.<sup>3</sup> This retransmit agreement would be applicable in the event that a grant of this construction permit

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<sup>1</sup> The Facility ID for K245AE at Cedar Rapids, Iowa is 152290.

<sup>2</sup> The Facility ID for KGYM at Cedar Rapids, Iowa is 9718.

<sup>3</sup> See FCC File No. BALFT-20120206AAS.

request is approved and construction completed before the transfer of the license to KZIA is completed.

Exhibit E-1 depicts the licensed and proposed 60 dBu service contours for K245AE. In addition, the 2.0 mV/m daytime service contour of KGYM and a 25-mile (40.2 kilometer) radius centered on KGYM are illustrated. This map demonstrates that the proposed relocation of the facility would, when combined with the previously mentioned channel change, constitute a minor change to the facility. It is also demonstrated by this exhibit that the proposed facility would be a fill-in translator for KGYM.

Exhibit E-2 is a tabular based allocation study for the proposed facility. This study demonstrates that the proposed facility would meet the contour overlap provisions of Section 74.1204 to all facilities except KFMW at Waterloo, Iowa, and KRQN at Vinton, Iowa. The allocation situation with these two facilities will be subsequently discussed. The tabular allocation study is graphically illustrated in the map in Exhibit E-3.

In the case of KFMW and KRQN, an alternate method of studying the potential of interference was studied. In both cases, a contour/free-space methodology was utilized to demonstrate that any potential interference that may occur would affect zero population. These two stations will be analyzed in alphabetical order.

In Exhibit E-4, the predicted 75 dBu service contour of KFMW is illustrated along with the KFMW and proposed K245AE site locations. This map demonstrates that the predicted 75 dBu F(50,50) service contour for KFMW extends beyond the proposed site location. Since the Commission's Rules define second adjacent interference to exist when a 40 dB U/D ratio is

exceeded, interference to KFMW will potentially exist in areas where the field strength of the proposed facility is 115 dBu or greater. Such a high field strength would exist in areas in close proximity to the K245AE antenna. The distance to this field strength is therefore better calculated using a free-space methodology.

The power density for the proposed facility at a field strength of 115 dBu is given by the following equation:

$$S = \frac{E^2}{Z_0} = \frac{(0.56234)^2}{377} = \mathbf{0.0008388} \quad \text{Eq. 1}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 115 dBu is 0.56234 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 (250 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:

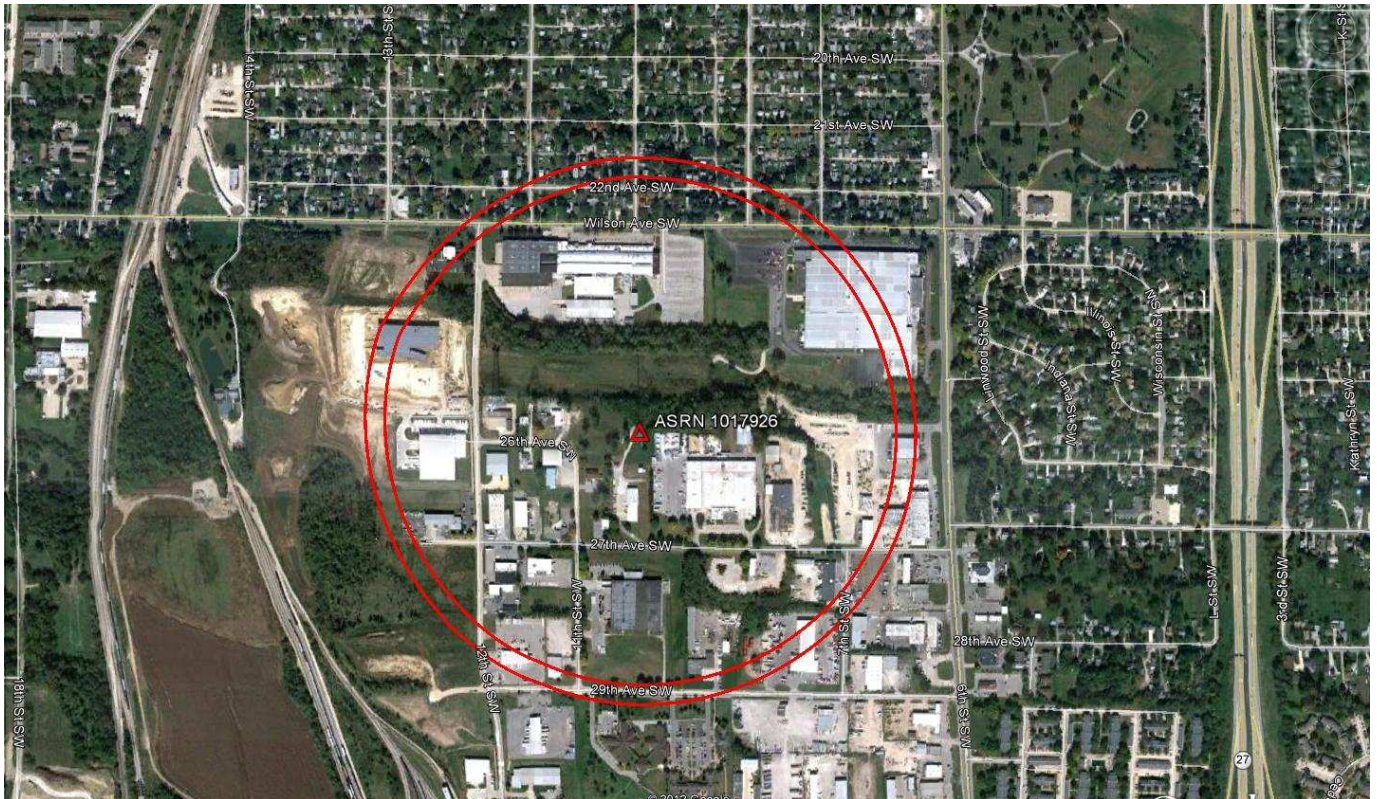
$$R^2 = \frac{P}{4\pi S} \quad \text{Eq. 3}$$

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-5. The relative field values at the indicated depression angles were taken from manufacturer's data for the proposed Electronics Research, Inc. (ERI) antenna.

As indicated in the tabulation, areas where the field strength from the proposed translator is 115 dBu or higher are confined to elevations of 103.9 meters (341 feet) above the site elevation or higher. This corresponds to elevations above mean sea level of 359.6 meters or greater. The maximum horizontal distance is calculated to be 154 meters from the antenna. Thus, any interference would be confined to a three-dimensional surface with these bounds. It will be subsequently demonstrated that there are no structures within these bounds, thus the population affected would be zero persons.

The same methodology was utilized in the case of KRQN. Exhibit E-6 demonstrates that the KRQN field strength in the vicinity of the proposed K245AE site is 61.4 dBu. Thus, the interfering field strength from K245AE is 101.4 dBu. The electric field intensity for 101.4 dBu is 0.1175 Volts per meter. Solving the above equations in the same form results in the table contained in Exhibit E-7.

In the table in Exhibit E-7, it can be seen that the closest the interference zone comes to ground level is 9.2 meters (roughly 30 feet) above ground within a zone of 437 to 471 meters from the base of the tower. The satellite image at the top of the next page illustrates this zone.



The buildings within this zone are all residential houses, or light industrial/commercial buildings. Street level images confirm that none of the structures has an elevation that would extend up in to the interference zone. As a result, it is respectfully submitted that any potential interference that may result from the modification of K245AE would affect zero persons.

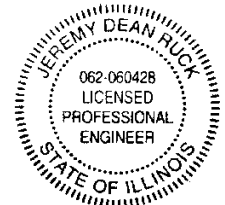
The proposed facility is exempt from environmental processing, and its construction would not have a substantial environmental impact. The proposed facility would utilize an existing tower that is registered with the Commission. The addition of the K245AE antenna would not increase the existing environmental impact already present.

The proposed facility would not constitute an RF exposure hazard to persons at the site. There are no other media bureau facilities proposed or existing at the structure. For a worst-case

analysis, the equations from Appendix A of OET Bulletin 65 will be utilized. Those equations result in a calculated power density at 2 meters above ground level of  $1.08 \mu\text{W}/\text{cm}^2$ .<sup>4</sup> Since this value is considerably less than the  $200 \mu\text{W}/\text{cm}^2$  permissible under the uncontrolled environment condition of the applicable safety standard, the proposed facility will not constitute a hazard to the general public.

XGM certifies that it will coordinate with all other present and future users of the site to ensure that workers are not exposed to levels of non-ionizing radiation in excess of the applicable safety standards. Such coordination will include, but is not necessarily limited to, a reduction in 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**  
**March 6, 2012**

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<sup>4</sup> This calculation assumes that the antenna radiates uniformly in all directions.



**K245AE.X**

PROPOSED

Latitude: 41-57-10.60 N  
Longitude: 091-40-59.90 W  
ERP: 0.25 kW  
Channel: 298  
Frequency: 107.5 MHz  
AMSL Height: 384.1 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**K245AE**

BLFT20120112AFF

Latitude: 41-50-08 N  
Longitude: 091-50-58 W  
ERP: 0.165 kW  
Channel: 245  
Frequency: 96.9 MHz  
AMSL Height: 279.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

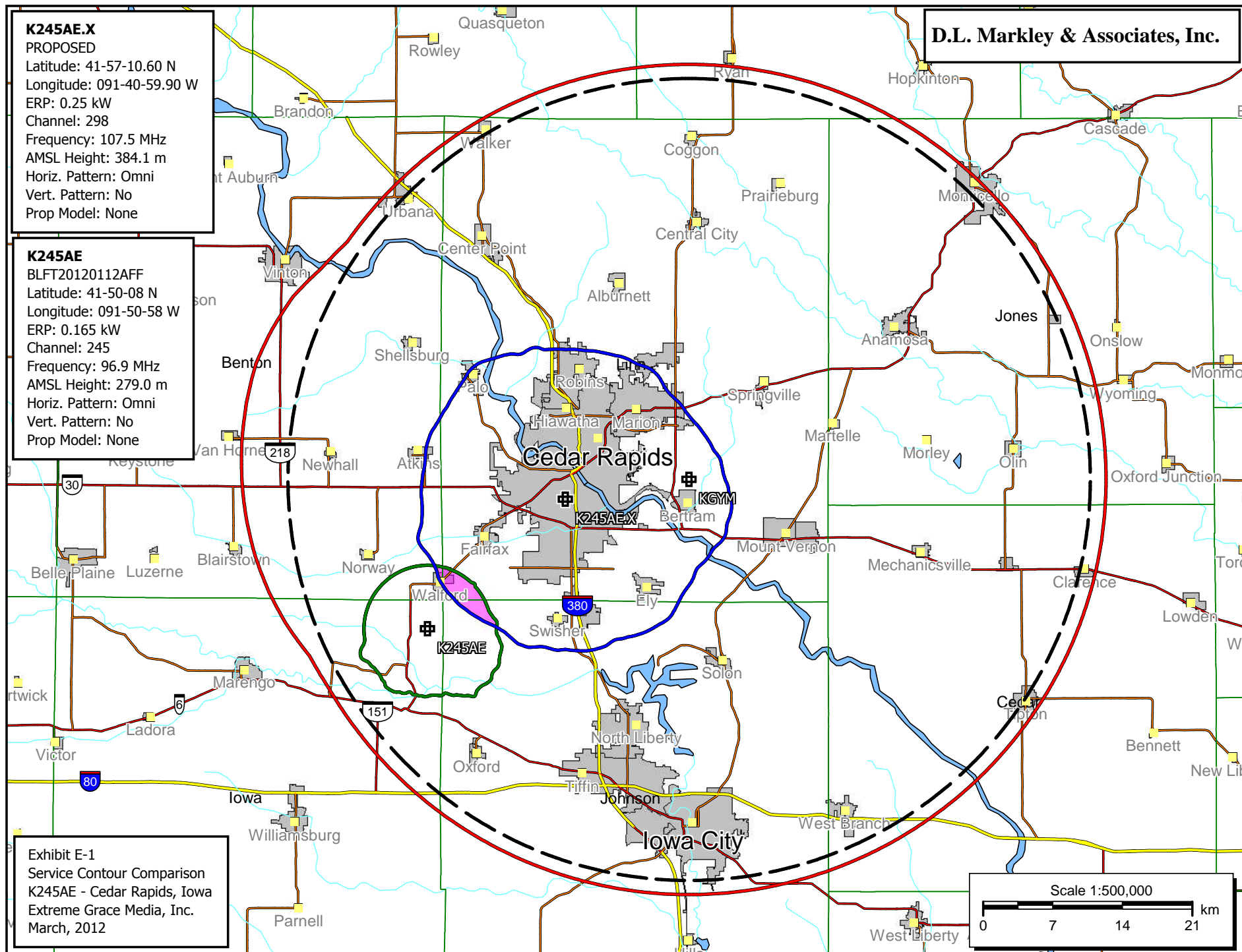
**D.L. Markley & Associates, Inc.**

Exhibit E-1  
Service Contour Comparison  
K245AE - Cedar Rapids, Iowa  
Extreme Grace Media, Inc.  
March, 2012

Scale 1:500,000

0 7 14 21 km



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

Exhibit E-2 - Tabular Allocation Study

K245AE - Cedar Rapids, Iowa

CH# 298D - 107.5 MHz, Pwr= 0.25 kw, HAAT= 139.2 M, COR= 384.1 M  
Average Protected F(50-50)= 15.21 km  
Omni-directional

DISPLAY DATES  
DATA 03-05-12  
SEARCH 03-06-12

REFERENCE  
41 57 10.6 N.  
91 40 59.9 W.

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
298C1 Des Moines	KKDM	LIC _CN IA		256.1 75.0	137.8 BLH19980202KG	41 38 38.0 93 17 20.0	100.000 220	164.4 485	65.9 Clear Channel Broadcasting	-41.8*	21.5
300C Waterloo	KFMW	LIC _C_ IA		345.2 165.1	51.4 BLH20031113AIR	42 24 02.0 91 50 36.0	100.000 550	13.1 834	89.7 Kxel Broadcasting Company,	22.9	-39.4*
296A Vinton	KRQN	LIC _CX IA		323.3 143.2	27.2 BMLH20051025ABI	42 08 56.0 91 52 50.0	4.700 113	2.8 366	29.9 George S. Flinn, Jr.	8.4	-3.8*
245D Cedar Rapids	K245AE	LIC _C_ IA		226.5 46.4	19.0 BLFT20120112AFF	41 50 08.0 91 50 58.0	0.165	6.4 279	6.4 Extreme Grace Media, Inc.	9.5R	9.5M
298A Galena	WDBQ-FM	LIC _CN IL		64.4 245.3	117.2 BMLH19970117KB	42 24 02.0 90 23 55.0	6.000 100	92.6 346	32.7 Cumulus Licensing Llc	9.2	33.7
295D Iowa City	K295AC	LIC _C_ IA		157.0 337.1	37.1 BLFT20110307AAS	41 38 45.0 91 30 32.0	0.250	1.1 238	7.1 Kirkwood Community College	20.8	28.9
297C1 Burlington	KGRS	LIC _CN IA		160.1 340.4	133.3 BLH19860915KC	40 49 26.0 91 08 33.0	100.000 131	82.6 316	53.3 Titan Broadcasting, Llc	35.7	57.4

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= West Zone, 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.

**K245AE.X**  
PROPOSED  
Latitude: 41-57-10.60 N  
Longitude: 091-40-59.90 W  
ERP: 0.25 kW  
Channel: 298  
Frequency: 107.5 MHz  
AMSL Height: 384.1 m  
Elevation: 244.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**D.L. Markley & Associates, Inc.**

- 60 dBu F(50,50) Service Contour
- 40 dBu F(50,10) Interference Contour
- 54 dBu F(50,10) Interference Contour
- 100 dBu F(50,10) Interference Contour

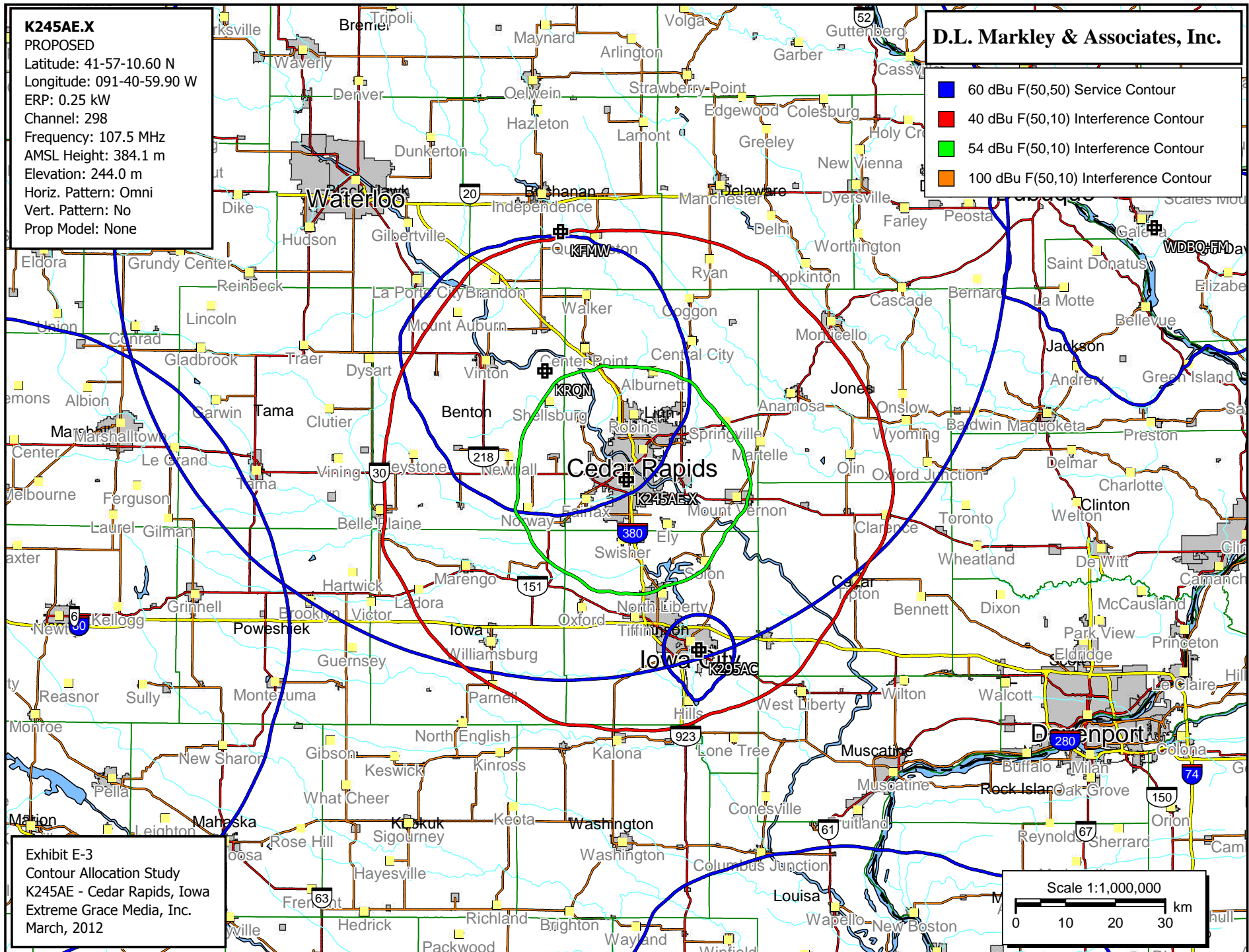


Exhibit E-3  
Contour Allocation Study  
K245AE - Cedar Rapids, Iowa  
Extreme Grace Media, Inc.  
March, 2012

**KFMW**

BLH20031113AIR  
Latitude: 42-24-02 N  
Longitude: 091-50-36 W  
ERP: 100.00 kW  
Channel: 300  
Frequency: 107.9 MHz  
AMSL Height: 834.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**K245AE.X**

PROPOSED  
Latitude: 41-57-10.60 N  
Longitude: 091-40-59.90 W  
ERP: 0.25 kW  
Channel: 298  
Frequency: 107.5 MHz  
AMSL Height: 384.1 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

Exhibit E-4  
Allocation Study to KFMW  
K245AE - Cedar Rapids, Iowa  
Extreme Grace Media, Inc.  
March, 2012

**D.L. Markley & Associates, Inc.**

KFMW Transmitter Site

KFMW 75 dBu  
F(50,50) Contour

Proposed K245AE Site

Scale 1:500,000

0 7 14 21 km

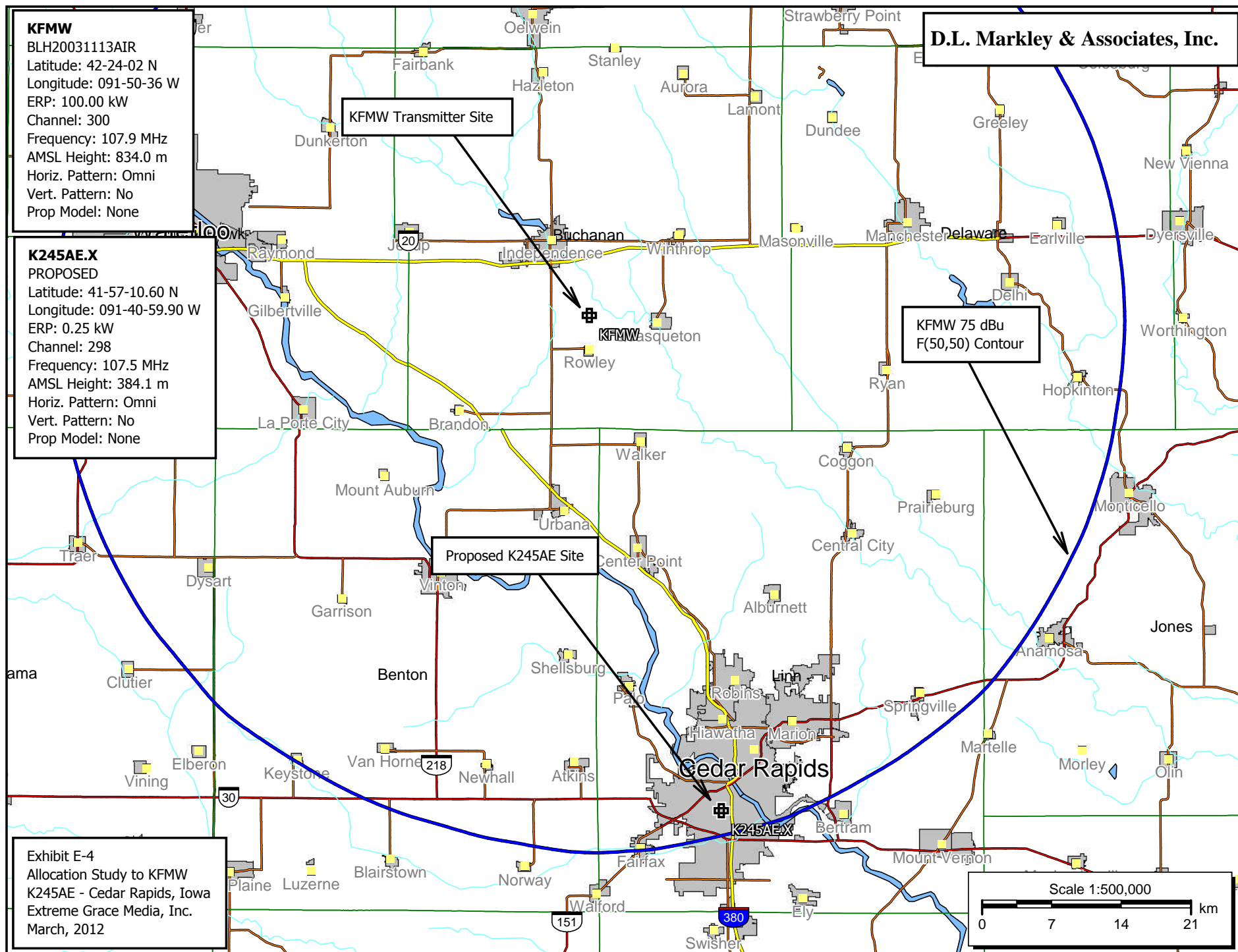


Exhibit E-5 - Summary of Power Density Calculations								
Facility:	K245AE							
COR:		128.4	m AGL				Z0 (Ohms)	377
ERP:		250	Watts				ALL distances meters	
Antenna:	ERI 100A-4F-HW							
FS Contour:		115	dBu					
E Field Strength:		0.5623	V/m					
Power Density:		0.0008388004	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
0	1.000	1.000	250.00	23717.641	154.01	0.00	128.40	154.01
1	0.998	0.996	249.00	23622.866	153.70	2.68	125.72	153.67
2	0.992	0.984	246.02	23339.677	152.77	5.33	123.07	152.68
3	0.982	0.964	241.08	22871.491	151.23	7.91	120.49	151.03
4	0.968	0.937	234.26	22223.999	149.08	10.40	118.00	148.71
5	0.951	0.904	226.10	21450.258	146.46	12.76	115.64	145.90
6	0.930	0.865	216.23	20513.388	143.22	14.97	113.43	142.44
7	0.905	0.819	204.76	19425.341	139.37	16.99	111.41	138.34
8	0.878	0.771	192.72	18283.550	135.22	18.82	109.58	133.90
9	0.847	0.717	179.35	17015.249	130.44	20.41	107.99	128.84
10	0.814	0.663	165.65	15715.214	125.36	21.77	106.63	123.46
11	0.778	0.605	151.32	14355.909	119.82	22.86	105.54	117.61
12	0.740	0.548	136.90	12987.780	113.96	23.69	104.71	111.47
13	0.700	0.490	122.50	11621.644	107.80	24.25	104.15	105.04
14	0.658	0.433	108.24	10268.885	101.34	24.52	103.88	98.33
15	0.615	0.378	94.56	8970.605	94.71	24.51	103.89	91.49
16	0.571	0.326	81.51	7732.923	87.94	24.24	104.16	84.53
17	0.526	0.277	69.17	6562.102	81.01	23.68	104.72	77.47
18	0.481	0.231	57.84	5487.337	74.08	22.89	105.51	70.45
19	0.436	0.190	47.52	4508.629	67.15	21.86	106.54	63.49
20	0.391	0.153	38.22	3625.977	60.22	20.60	107.80	56.58
21	0.347	0.120	30.10	2855.817	53.44	19.15	109.25	49.89
22	0.303	0.092	22.95	2177.493	46.66	17.48	110.92	43.27
23	0.260	0.068	16.90	1603.313	40.04	15.65	112.75	36.86
24	0.218	0.048	11.88	1127.157	33.57	13.66	114.74	30.67
25	0.178	0.032	7.92	751.470	27.41	11.59	116.81	24.84
26	0.140	0.020	4.90	464.866	21.56	9.45	118.95	19.38
27	0.103	0.011	2.65	251.620	15.86	7.20	121.20	14.13
28	0.068	0.005	1.16	109.670	10.47	4.92	123.48	9.25
29	0.035	0.001	0.31	29.054	5.39	2.61	125.79	4.71
30	0.004	0.000	0.00	0.379	0.62	0.31	128.09	0.53
31	0.025	0.001	0.16	14.824	3.85	1.98	126.42	3.30
32	0.051	0.003	0.65	61.690	7.85	4.16	124.24	6.66
33	0.075	0.006	1.41	133.412	11.55	6.29	122.11	9.69
34	0.097	0.009	2.35	223.159	14.94	8.35	120.05	12.38
35	0.117	0.014	3.42	324.671	18.02	10.34	118.06	14.76
36	0.134	0.018	4.49	425.874	20.64	12.13	116.27	16.70
37	0.149	0.022	5.55	526.555	22.95	13.81	114.59	18.33
38	0.162	0.026	6.56	622.446	24.95	15.36	113.04	19.66

Exhibit E-5 - Summary of Power Density Calculations								
Facility:	K245AE							
COR:		128.4	m AGL				Z0 (Ohms)	377
ERP:		250	Watts				ALL distances meters	
Antenna:	ERI 100A-4F-HW							
FS Contour:		115	dBu					
E Field Strength:		0.5623	V/m					
Power Density:		0.0008388004	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
39	0.173	0.030	7.48	709.845	26.64	16.77	111.63	20.71
40	0.182	0.033	8.28	785.623	28.03	18.02	110.38	21.47
41	0.189	0.036	8.93	847.218	29.11	19.10	109.30	21.97
42	0.194	0.038	9.41	892.637	29.88	19.99	108.41	22.20
43	0.197	0.039	9.70	920.458	30.34	20.69	107.71	22.19
44	0.199	0.040	9.90	939.242	30.65	21.29	107.11	22.05
45	0.200	0.040	10.00	948.706	30.80	21.78	106.62	21.78
46	0.199	0.040	9.90	939.242	30.65	22.05	106.35	21.29
47	0.196	0.038	9.60	911.137	30.19	22.08	106.32	20.59
48	0.193	0.037	9.31	883.458	29.72	22.09	106.31	19.89
49	0.189	0.036	8.93	847.218	29.11	21.97	106.43	19.10
50	0.184	0.034	8.46	802.984	28.34	21.71	106.69	18.21
51	0.178	0.032	7.92	751.470	27.41	21.30	107.10	17.25
52	0.172	0.030	7.40	701.663	26.49	20.87	107.53	16.31
53	0.165	0.027	6.81	645.713	25.41	20.29	108.11	15.29
54	0.157	0.025	6.16	584.616	24.18	19.56	108.84	14.21
55	0.150	0.023	5.63	533.647	23.10	18.92	109.48	13.25
56	0.142	0.020	5.04	478.243	21.87	18.13	110.27	12.23
57	0.134	0.018	4.49	425.874	20.64	17.31	111.09	11.24
58	0.126	0.016	3.97	376.541	19.40	16.46	111.94	10.28
59	0.118	0.014	3.48	330.244	18.17	15.58	112.82	9.36
60	0.110	0.012	3.03	286.983	16.94	14.67	113.73	8.47
61	0.102	0.010	2.60	246.758	15.71	13.74	114.66	7.62
62	0.094	0.009	2.21	209.569	14.48	12.78	115.62	6.80
63	0.086	0.007	1.85	175.416	13.24	11.80	116.60	6.01
64	0.079	0.006	1.56	148.022	12.17	10.94	117.46	5.33
65	0.072	0.005	1.30	122.952	11.09	10.05	118.35	4.69
66	0.065	0.004	1.06	100.207	10.01	9.14	119.26	4.07
67	0.059	0.003	0.87	82.561	9.09	8.36	120.04	3.55
68	0.053	0.003	0.70	66.623	8.16	7.57	120.83	3.06
69	0.047	0.002	0.55	52.392	7.24	6.76	121.64	2.59
70	0.042	0.002	0.44	41.838	6.47	6.08	122.32	2.21
71	0.037	0.001	0.34	32.469	5.70	5.39	123.01	1.86
72	0.032	0.001	0.26	24.287	4.93	4.69	123.71	1.52
73	0.028	0.001	0.20	18.595	4.31	4.12	124.28	1.26
74	0.024	0.001	0.14	13.661	3.70	3.55	124.85	1.02
75	0.021	0.000	0.11	10.459	3.23	3.12	125.28	0.84
76	0.018	0.000	0.08	7.685	2.77	2.69	125.71	0.67
77	0.015	0.000	0.06	5.336	2.31	2.25	126.15	0.52

Exhibit E-5 - Summary of Power Density Calculations								
Facility:	K245AE							
COR:		128.4	m AGL				Z0 (Ohms)	377
ERP:		250	Watts				ALL distances meters	
Antenna:	ERI 100A-4F-HW							
FS Contour:		115	dBu					
E Field Strength:		0.5623	V/m					
Power Density:		0.0008388004	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
78	0.012	0.000	0.04	3.415	1.85	1.81	126.59	0.38
79	0.010	0.000	0.03	2.372	1.54	1.51	126.89	0.29
80	0.008	0.000	0.02	1.518	1.23	1.21	127.19	0.21
81	0.007	0.000	0.01	1.162	1.08	1.06	127.34	0.17
82	0.005	0.000	0.01	0.593	0.77	0.76	127.64	0.11
83	0.004	0.000	0.00	0.379	0.62	0.61	127.79	0.08
84	0.003	0.000	0.00	0.213	0.46	0.46	127.94	0.05
85	0.002	0.000	0.00	0.095	0.31	0.31	128.09	0.03
86	0.002	0.000	0.00	0.095	0.31	0.31	128.09	0.02
87	0.001	0.000	0.00	0.024	0.15	0.15	128.25	0.01
88	0.001	0.000	0.00	0.024	0.15	0.15	128.25	0.01
89	0.001	0.000	0.00	0.024	0.15	0.15	128.25	0.00
90	0.001	0.000	0.00	0.024	0.15	0.15	128.25	0.00

**KRQN**

BMLH20051025ABI  
Latitude: 42-08-56 N  
Longitude: 091-52-50 W  
ERP: 4.70 kW  
Channel: 296  
Frequency: 107.1 MHz  
AMSL Height: 366.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**K245AE.X**

PROPOSED  
Latitude: 41-57-10.60 N  
Longitude: 091-40-59.90 W  
ERP: 0.25 kW  
Channel: 298  
Frequency: 107.5 MHz  
AMSL Height: 384.1 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**D.L. Markley & Associates, Inc.**

KRQN 61.4 dBu  
Service Contour

Proposed K245AE Site

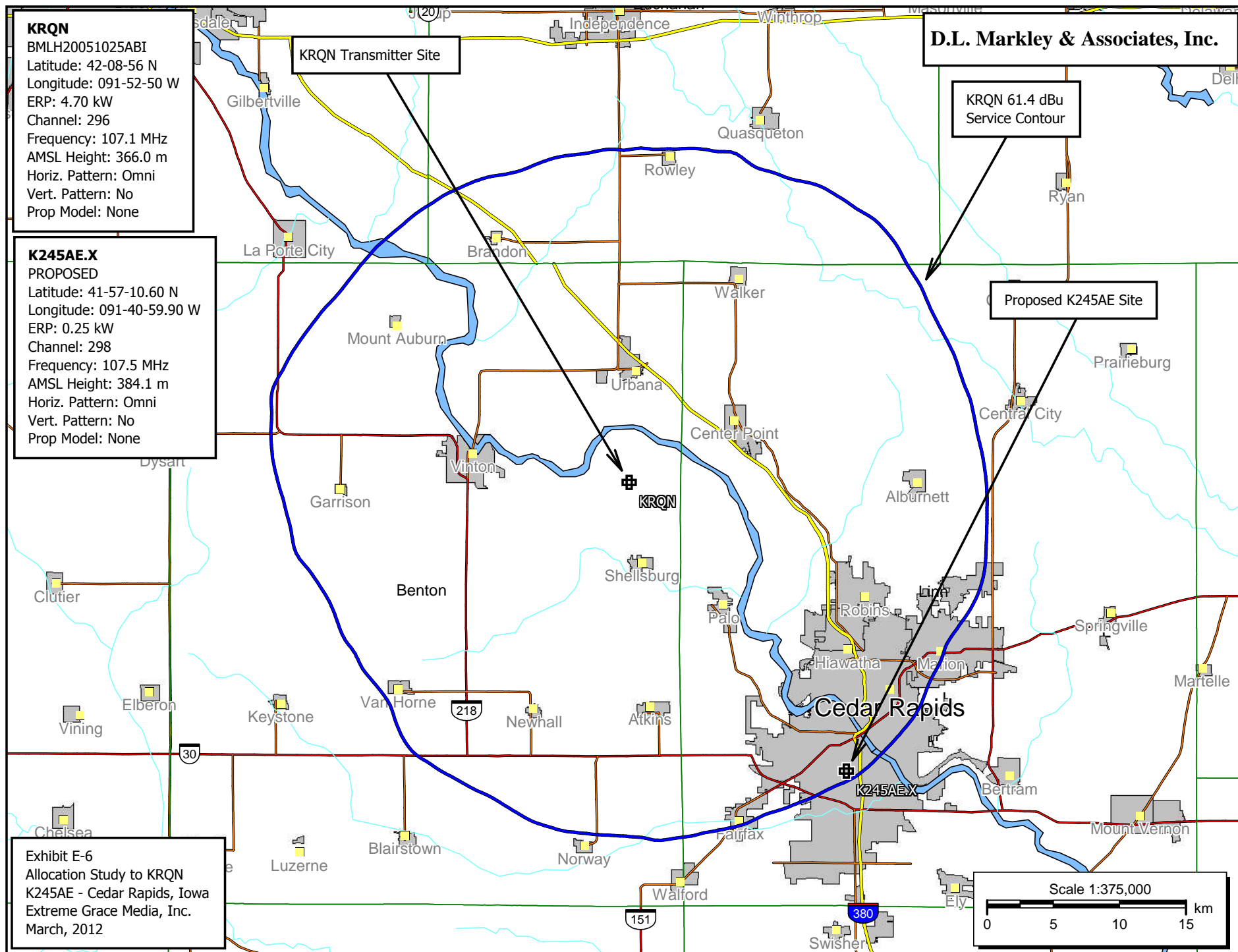


Exhibit E-6  
Allocation Study to KRQN  
K245AE - Cedar Rapids, Iowa  
Extreme Grace Media, Inc.  
March, 2012



Exhibit E-7 - Summary of Power Density Calculations								
Facility:	K245AE							
COR:		126.5	m AGL				Z0 (Ohms)	377
ERP:		250	Watts				ALL distances meters	
Antenna:	ERI 100A-4F-HW							
FS Contour:		101.4	dBu					
E Field Strength:		0.1175	V/m					
Power Density:		0.0000366150	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	250.00	543339.770	737.12	0.00	126.50	737.12
1	0.998	0.996	249.00	541168.585	735.64	12.84	113.66	735.53
2	0.992	0.984	246.02	534681.108	731.22	25.52	100.98	730.77
3	0.982	0.964	241.08	523955.581	723.85	37.88	88.62	722.86
4	0.968	0.937	234.26	509122.405	713.53	49.77	76.73	711.79
5	0.951	0.904	226.10	491397.032	701.00	61.10	65.40	698.33
6	0.930	0.865	216.23	469934.567	685.52	71.66	54.84	681.76
7	0.905	0.819	204.76	445008.855	667.09	81.30	45.20	662.12
8	0.878	0.771	192.72	418851.935	647.19	90.07	36.43	640.89
9	0.847	0.717	179.35	389796.841	624.34	97.67	28.83	616.65
10	0.814	0.663	165.65	360014.758	600.01	104.19	22.31	590.90
11	0.778	0.605	151.32	328874.870	573.48	109.42	17.08	562.94
12	0.740	0.548	136.90	297532.858	545.47	113.41	13.09	533.55
13	0.700	0.490	122.50	266236.487	515.98	116.07	10.43	502.76
14	0.658	0.433	108.24	235246.560	485.02	117.34	9.16	470.61
15	0.615	0.378	94.56	205504.685	453.33	117.33	9.17	437.88
16	0.571	0.326	81.51	177151.042	420.89	116.01	10.49	404.59
17	0.526	0.277	69.17	150329.074	387.72	113.36	13.14	370.78
18	0.481	0.231	57.84	125707.633	354.55	109.56	16.94	337.20
19	0.436	0.190	47.52	103286.717	321.38	104.63	21.87	303.87
20	0.391	0.153	38.22	83066.327	288.21	98.57	27.93	270.83
21	0.347	0.120	30.10	65422.998	255.78	91.66	34.84	238.79
22	0.303	0.092	22.95	49883.481	223.35	83.67	42.83	207.08
23	0.260	0.068	16.90	36729.768	191.65	74.88	51.62	176.41
24	0.218	0.048	11.88	25821.679	160.69	65.36	61.14	146.80
25	0.178	0.032	7.92	17215.177	131.21	55.45	71.05	118.91
26	0.140	0.020	4.90	10649.459	103.20	45.24	81.26	92.75
27	0.103	0.011	2.65	5764.292	75.92	34.47	92.03	67.65
28	0.068	0.005	1.16	2512.403	50.12	23.53	102.97	44.26
29	0.035	0.001	0.31	665.591	25.80	12.51	113.99	22.56
30	0.004	0.000	0.00	8.693	2.95	1.47	125.03	2.55
31	0.025	0.001	0.16	339.587	18.43	9.49	117.01	15.80
32	0.051	0.003	0.65	1413.227	37.59	19.92	106.58	31.88
33	0.075	0.006	1.41	3056.286	55.28	30.11	96.39	46.36
34	0.097	0.009	2.35	5112.284	71.50	39.98	86.52	59.28
35	0.117	0.014	3.42	7437.778	86.24	49.47	77.03	70.65
36	0.134	0.018	4.49	9756.209	98.77	58.06	68.44	79.91
37	0.149	0.022	5.55	12062.686	109.83	66.10	60.40	87.71
38	0.162	0.026	6.56	14259.409	119.41	73.52	52.98	94.10

Exhibit E-7 - Summary of Power Density Calculations								
Facility:	K245AE							
COR:		126.5	m AGL				Z0 (Ohms)	377
ERP:		250	Watts				ALL distances meters	
Antenna:	ERI 100A-4F-HW							
FS Contour:		101.4	dBu					
E Field Strength:		0.1175	V/m					
Power Density:		0.0000366150	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
39	0.173	0.030	7.48	16261.616	127.52	80.25	46.25	99.10
40	0.182	0.033	8.28	17997.587	134.16	86.23	40.27	102.77
41	0.189	0.036	8.93	19408.640	139.31	91.40	35.10	105.14
42	0.194	0.038	9.41	20449.136	143.00	95.69	30.81	106.27
43	0.197	0.039	9.70	21086.473	145.21	99.03	27.47	106.20
44	0.199	0.040	9.90	21516.798	146.69	101.90	24.60	105.52
45	0.200	0.040	10.00	21733.591	147.42	104.24	22.26	104.24
46	0.199	0.040	9.90	21516.798	146.69	105.52	20.98	101.90
47	0.196	0.038	9.60	20872.941	144.47	105.66	20.84	98.53
48	0.193	0.037	9.31	20238.863	142.26	105.72	20.78	95.19
49	0.189	0.036	8.93	19408.640	139.31	105.14	21.36	91.40
50	0.184	0.034	8.46	18395.311	135.63	103.90	22.60	87.18
51	0.178	0.032	7.92	17215.177	131.21	101.97	24.53	82.57
52	0.172	0.030	7.40	16074.164	126.78	99.91	26.59	78.06
53	0.165	0.027	6.81	14792.425	121.62	97.13	29.37	73.20
54	0.157	0.025	6.16	13392.782	115.73	93.63	32.87	68.02
55	0.150	0.023	5.63	12225.145	110.57	90.57	35.93	63.42
56	0.142	0.020	5.04	10955.903	104.67	86.78	39.72	58.53
57	0.134	0.018	4.49	9756.209	98.77	82.84	43.66	53.80
58	0.126	0.016	3.97	8626.062	92.88	78.76	47.74	49.22
59	0.118	0.014	3.48	7565.463	86.98	74.56	51.94	44.80
60	0.110	0.012	3.03	6574.411	81.08	70.22	56.28	40.54
61	0.102	0.010	2.60	5652.907	75.19	65.76	60.74	36.45
62	0.094	0.009	2.21	4800.950	69.29	61.18	65.32	32.53
63	0.086	0.007	1.85	4018.541	63.39	56.48	70.02	28.78
64	0.079	0.006	1.56	3390.984	58.23	52.34	74.16	25.53
65	0.072	0.005	1.30	2816.673	53.07	48.10	78.40	22.43
66	0.065	0.004	1.06	2295.611	47.91	43.77	82.73	19.49
67	0.059	0.003	0.87	1891.366	43.49	40.03	86.47	16.99
68	0.053	0.003	0.70	1526.241	39.07	36.22	90.28	14.63
69	0.047	0.002	0.55	1200.238	34.64	32.34	94.16	12.42
70	0.042	0.002	0.44	958.451	30.96	29.09	97.41	10.59
71	0.037	0.001	0.34	743.832	27.27	25.79	100.71	8.88
72	0.032	0.001	0.26	556.380	23.59	22.43	104.07	7.29
73	0.028	0.001	0.20	425.978	20.64	19.74	106.76	6.03
74	0.024	0.001	0.14	312.964	17.69	17.01	109.49	4.88
75	0.021	0.000	0.11	239.613	15.48	14.95	111.55	4.01
76	0.018	0.000	0.08	176.042	13.27	12.87	113.63	3.21
77	0.015	0.000	0.06	122.251	11.06	10.77	115.73	2.49

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ERP:		250	Watts				ALL distances meters	
Antenna:	ERI 100A-4F-HW							
FS Contour:		101.4	dBu					
E Field Strength:		0.1175	V/m					
Power Density:		0.0000366150	W/m^2					
Dep.			ERP in	Radius	Field Strength	Radius	Radius	Radius
θ	Erel	Prel	Watts	Squared	Radius	Vert. Dist.	AGL	Horiz. Dist.
78	0.012	0.000	0.04	78.241	8.85	8.65	117.85	1.84
79	0.010	0.000	0.03	54.334	7.37	7.24	119.26	1.41
80	0.008	0.000	0.02	34.774	5.90	5.81	120.69	1.02
81	0.007	0.000	0.01	26.624	5.16	5.10	121.40	0.81
82	0.005	0.000	0.01	13.583	3.69	3.65	122.85	0.51
83	0.004	0.000	0.00	8.693	2.95	2.93	123.57	0.36
84	0.003	0.000	0.00	4.890	2.21	2.20	124.30	0.23
85	0.002	0.000	0.00	2.173	1.47	1.47	125.03	0.13
86	0.002	0.000	0.00	2.173	1.47	1.47	125.03	0.10
87	0.001	0.000	0.00	0.543	0.74	0.74	125.76	0.04
88	0.001	0.000	0.00	0.543	0.74	0.74	125.76	0.03
89	0.001	0.000	0.00	0.543	0.74	0.74	125.76	0.01
90	0.001	0.000	0.00	0.543	0.74	0.74	125.76	0.00