

APPLICATION FOR CONSTRUCTION PERMIT

K248CC - TYLER, TEXAS
FACILITY ID: 156984
97.5 MHz / 250 W ERP ND

E-STRING WIRELESS, LTD

FEBRUARY, 2014

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **E-String Wireless, Ltd** ("E-String"), licensee of FM translator station K248CC at Lindale, Texas, and are in support of their application for construction permit to modify that facility.

K248CC is currently licensed to operate with a maximum effective radiated power of 170 Watts at a center of radiation of 229 meters above mean sea level from a registered tower in Lindale, Texas. This application seeks to relocate the translator from its current licensed location to nearby Tyler, Texas. As part of this relocation, E-String also seeks to change the community of license from Lindale to Tyler, Texas. The proposed changes to the facility are considered minor under the Commission's Rules. Exhibit E-1 compares the licensed 60 dBu service contour to the proposed 60 dBu service contour, and illustrates the area of overlap between the two contours.

The proposed facility would continue to operate on channel 248, with KATG(FM) at Elkhart, Texas as the primary facility.¹ The parameters proposed for K248CC specify a maximum effective radiated power of 205 Watts utilizing a non-directional antenna.² The center of radiation proposed is 246.5 meters above mean sea level, which is equivalent to 79.8 meters above ground level at the site. The proposed antenna would be located at the Plaza Tower in Tyler, Texas, which bears ASRN 1065551. Exhibit E-2 illustrates both the proposed 60 dBu service contour and the KATG(FM) 60 dBu service contour.

¹ The Facility ID for KATG(FM) at Elkhart, Texas is 86330.

² The maximum ERP for the facility is reduced from 250 Watts to 205 Watts due to the height above average terrain on the 60, 240, and 300 degree true radials.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
jeremyruck.com

The proposed facility would comply with the provisions of Section 74.1204 of the Commission's Rules. Section 74.1205 is not applicable due to the channel of operation. Exhibit E-3 is a tabular interference study for the proposed facility. This study demonstrates that the proposed facility would comply with the contour overlap provisions of Section 74.1204 to all facilities with the exception of the two pending applications for the E-String translator at Athens, Texas, and FM translator station K250AJ at Tyler, Texas.³

The application for the Athens translator, submitted by E-String, will be amended to specify a different site. This change in the proposed site location will be a minor change. The current application for the Athens translator is under FCC File No. BNPFT-20130830ANV, and will be relocated such that the minimal amount of contour overlap from the proposed K248CC facility is eliminated. The tabular allocation study, minus the Athens facility, is graphically illustrated in the contour map in Exhibit E-4.

Although there would be normally prohibited contour overlap between the proposed facility and K250AJ at Tyler, Texas, no interference is predicted to occur to any populated area. Exhibit E-5 illustrates the proposed K248CC site location along with the K250AJ 71.3 dBu service contour. As this map demonstrates, the 71.3 dBu contour from K250AJ would intersect the proposed K248CC transmitter site. Since K250AJ operates on a second adjacent channel to the proposed facility, interference to K250AJ would potentially occur in regions where the field strength of K248CC is at least 40 dB greater than that of K250AJ. Specifically in the immediate vicinity of the

³ The Facility ID for the proposed Athens, TX translator is 156860. The Facility ID for K250AJ at Tyler, Texas is 142709.

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P.O. Box 415
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Canton, IL 61520

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Fax: 855.332.9537
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proposed site, interference to K250AJ may occur when the K248CC field strength is at least 111.3 dBu.

The power density for the interfering field strength is given by the following equation:

$$S = \frac{E^2}{Z_0}$$

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

The power density is also given by:

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

Where S is the same units, P is the total power in Watts 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:

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

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, Exhibit E-6 also provides several graphs illustrating the interference region for a given azimuth slice. As the form pages indicate, a PSI model PSIFML-4/0.625 model antenna is proposed for use. The relative field values listed at the various depression angles were obtained from data published by the manufacturer.

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The resulting radii values indicate the volume in which interference may potentially occur relative to the center of radiation of the antenna. As the values and tables indicate, this interference area is confined to a volume with an elevation of at least 40.8 meters above ground level. The following photograph is a street level image illustrating the building on which the translator antenna would be mounted.⁴



The building to the left (south) of the Plaza Tower is known as the People's Petroleum Building. This structure has an architectural height of 202 feet, or 61.6 meters AGL.⁵ The closest point of approach of this building to the antenna location on the Plaza tower is a horizontal distance of 50.2 meters. Due to the height differential between the People's Petroleum Building

⁴ The supporting structure is the Plaza Tower, which is the black building right of center in this image.

⁵ The tip height of the building is 252 feet AGL, which includes the top mounted flagpole.

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221 S. 1st Avenue
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("PPB") and the Plaza Tower, the depression angles from the antenna required to intersect the PPB are values of at least 20 degrees. At depression angles of 20 degrees or greater, the maximum horizontal distance from the antenna at which interference would potentially occur is 50.1 meters at a depression angle of 34 degrees. Therefore, the potential interference region would not impact the PPB. Furthermore, it can be reasonably inferred from the above photograph that there are no other structures in the vicinity of the Plaza Tower that would potentially be impacted. Finally, interference to the spaces within the Plaza Tower is not expected to occur due to the attenuating nature of the rooftop materials, and the very high depression angles required to reach these areas.

The facility specified in this application would not constitute a significant environmental impact, and is excluded from environmental processing. The translator would utilize an existing antenna structure that is registered with the Commission. The addition of the translator antenna to this tower would not increase the existing environmental impact already present from the facility.

In addition, the proposed facility would not constitute a radiofrequency radiation hazard to persons at the site. *FM Model* predicts a power density at ground level of less than $0.05 \mu\text{W}/\text{cm}^2$. This value is considerably less than the upper limit permissible under the uncontrolled environment condition of the applicable safety standard. The rooftop of the building constitutes a controlled environment due to the other facilities located there. E-String will coordinate with all other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include a reduction in transmitter power or cessation of operation as necessary to protect persons in the vicinity of the

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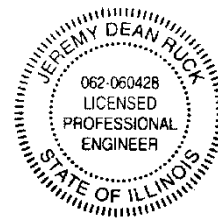
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221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
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antenna. The predicted power density from the proposed K248CC facility does not exceed the controlled environment limits at the rooftop level.

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, 2015

Jeremy D. Ruck, PE
February 25, 2014

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
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K248CC

BLFT20140106DFZ
Latitude: 32-30-49 N
Longitude: 095-25-14 W
ERP: 0.17 kW
Channel: 248
Frequency: 97.5 MHz
AMSL Height: 229.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

K248CC.X

BLFT20140106DFZ
Latitude: 32-21-05 N
Longitude: 095-18-06 W
ERP: 0.205 kW
Channel: 248
Frequency: 97.5 MHz
AMSL Height: 246.5 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

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Licensed K248CC
60 dBu Contour

Proposed K248CC
60 dBu Contour

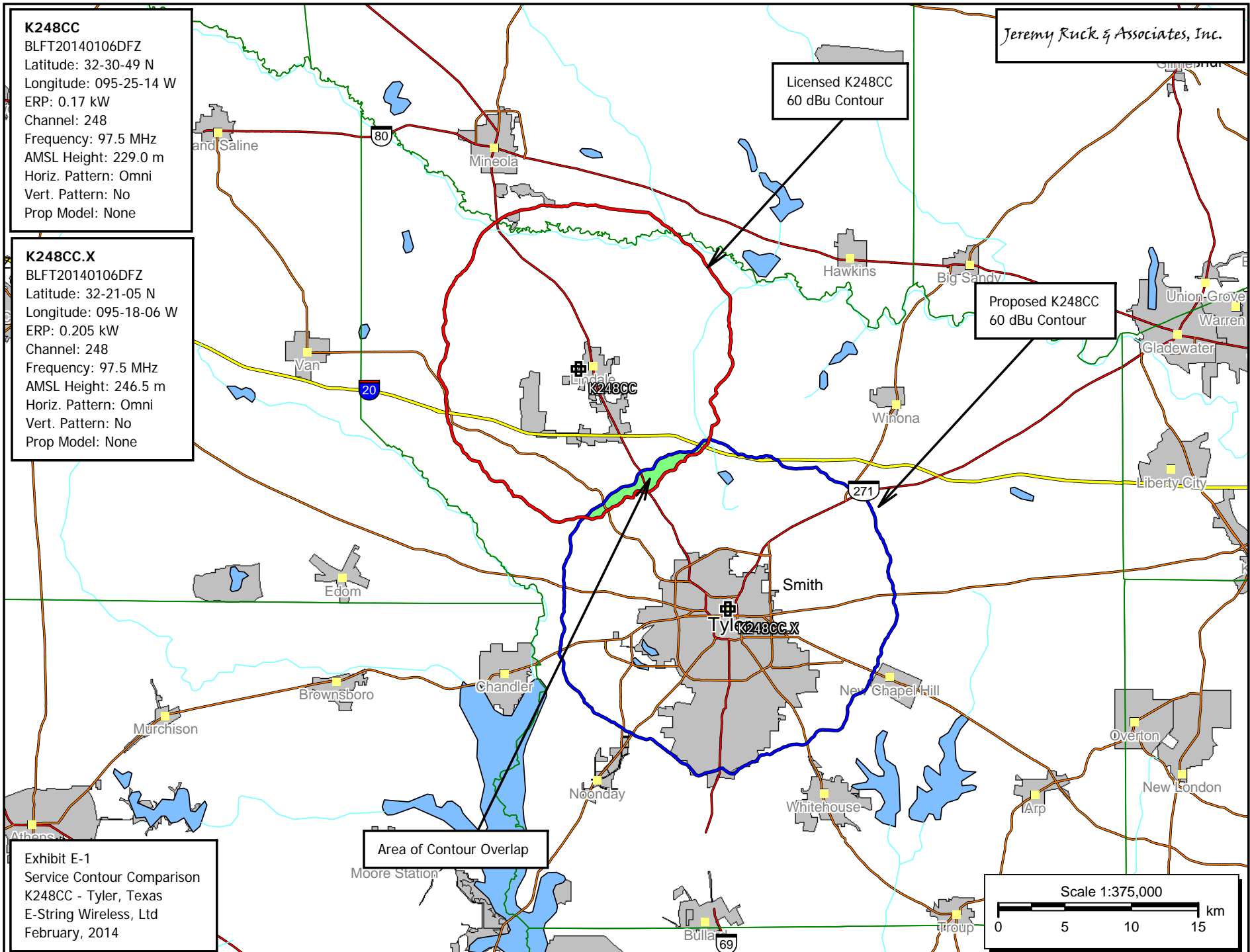


Exhibit E-1
Service Contour Comparison
K248CC - Tyler, Texas
E-String Wireless, Ltd
February, 2014

Area of Contour Overlap

Scale 1:375,000

0 5 10 15 km

K248CC.X

BLFT20140106DFZ
Latitude: 32-21-05 N
Longitude: 095-18-06 W
ERP: 0.25 kW
Channel: 248
Frequency: 97.5 MHz
AMSL Height: 246.5 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

KATG

BLED20120424AAO
Latitude: 32-02-41 N
Longitude: 095-40-37 W
ERP: 80.00 kW
Channel: 201
Frequency: 88.1 MHz
AMSL Height: 306.0 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

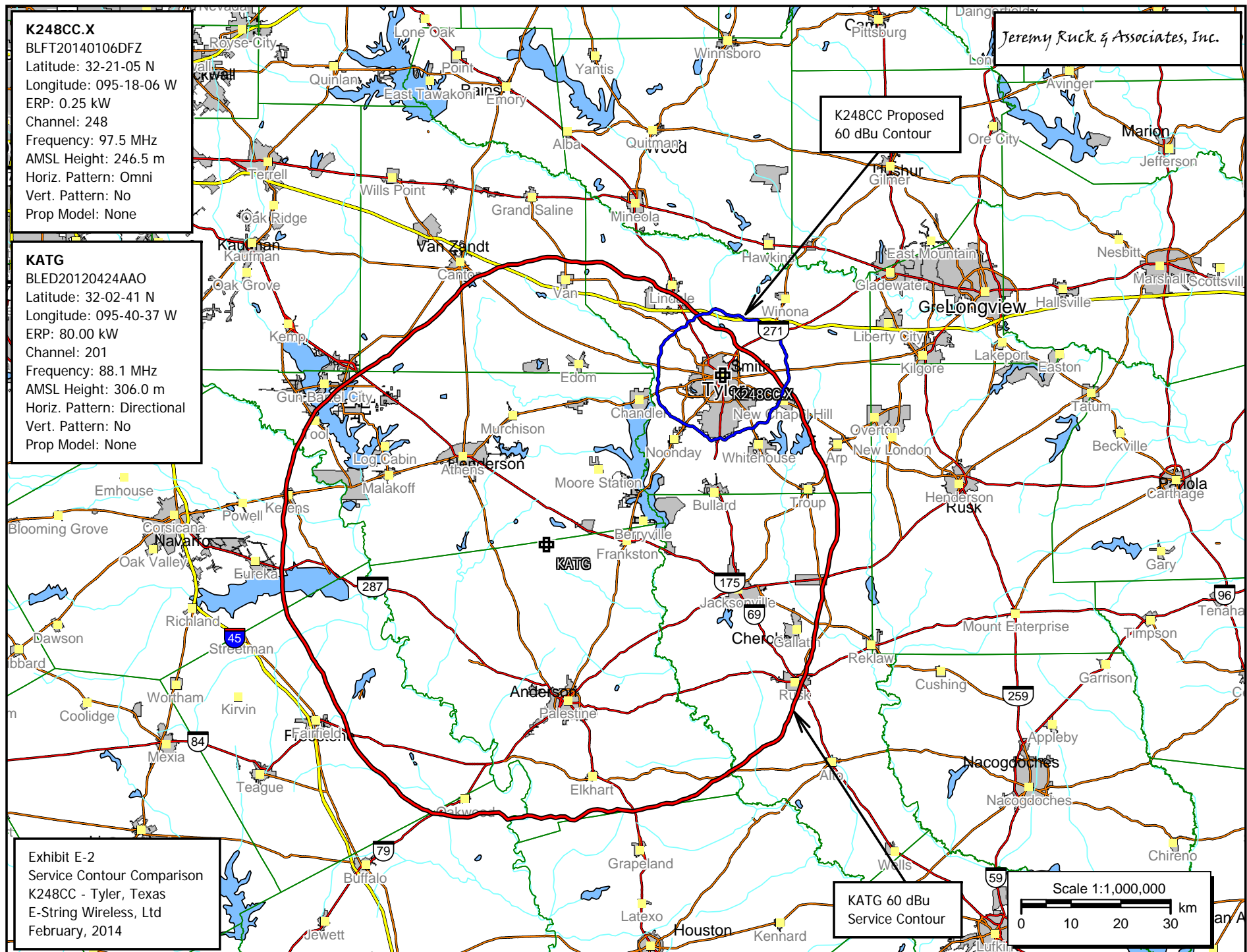
Exhibit E-2
Service Contour Comparison
K248CC - Tyler, Texas
E-String Wireless, Ltd
February, 2014

K248CC Proposed
60 dBu Contour

KATG 60 dBu
Service Contour

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Scale 1:1,000,000
0 10 20 30 km



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

Exhibit E-3 - Tabular Interference Study
K248CC - Tyler, Texas
CH# 248D - 97.5 MHz, Pwr= 0.205 kW, HAAT= 100.0 M, COR= 246.5 M
Average Protected F(50-50)= 12.26 km
Omni-directional

REFERENCE
32 21 05.0 N.
95 18 06.0 W.

DISPLAY DATES
DATA 02-25-14
SEARCH 02-25-14

CH CI TY	CALL	TYPE ANT STATE	AZI <--	DI ST FI LE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
248D Lindale	K248CC	LIC _C_ TX	328.3 148.2	21.20 BLFT20140106DFZ	32 30 49.0 95 25 14.0	0.170 95	38.4 229	10.6 E-string Wireless, Ltd	-28.0*	-31.5
249C3 Rusk	KWRW	LIC NCN TX	168.3 348.3	60.33 BLH19940124KB	31 49 12.0 95 10 19.0	14.500 124	59.5 258	39.4 E. H. Whitehead	-10.5	4.2
250D Tyler	K250AJ	LIC _C_ TX	148.4 328.4	5.32 BLFT20100618AYV	32 18 38.0 95 16 19.0	0.165 86	0.9 230	10.2 East Texas Community Repea	-7.2*	-5.9*
248D Athens	1570796	APP _C_ TX	253.4 73.1	55.80 BNPFT20130830ANV	32 12 23.0 95 52 12.0	0.115 132	38.6 263	11.1 E-string Wireless, Ltd	4.2	-0.3
248D Athens	1558530	APP _C_ TX	253.4 73.1	55.80 BNPFT20030317JNC	32 12 23.0 95 52 12.0	0.115 132	38.6 263	11.1 E-string Wireless, Ltd	4.2	-0.3
247L1 La Rue	NEW	CP ____ TX	230.8 50.7	27.36 BNPL20131113ABR	32 11 44.0 95 31 37.0	0.100 29	159	La Rue Educational Christi	4.8	1.2
248C Waco	R10630	DEL ____ TX	239.8 58.8	220.66	31 20 15.0 97 18 37.0	100.000 600	198.9 806	92.5 Capstar, Clear Channel, Ra	8.6	84.2
248L1 Canton	1615879	APP ____ TX	294.6 114.2	58.86 BNPL20131115AIF	32 34 12.4 95 52 23.3	0.100 22	171	St. Therese Catholic Churc	27.3	8.8
248C2 Tom Bean	KLAK	LIC _CX TX	319.8 139.2	164.34 BLH20060124AFV	33 28 30.0 96 26 45.0	32.000 188	133.3 406	52.6 Nm License, LLC	18.8	70.0
248C Waco	KWTX-FM	LIC _C_ TX	239.8 58.8	220.66 BLH19981125KE	31 20 15.0 97 18 37.0	100.000 451	188.0 651	84.4 Capstar Tx LLC	19.6	92.4
247D Henderson	K247BR	CP _C_ TX	111.6 291.8	50.05 BNPFT20130828ACV	32 11 06.0 94 48 25.0	0.250 91	15.8 219	11.1 East Texas Community Repea	22.3	21.1
249C3 Winfield	KALK	LIC NCN TX	5.3 185.4	92.93 BLH19920813KC	33 11 01.0 95 12 32.0	22.500 100	56.2 226	35.9 East Texas Broadcasting, I	24.2	39.7
245C3 Pittsburg	KSCN	LIC NC_ TX	16.4 196.6	76.20 BLH20010730ABF	33 00 31.0 95 04 14.0	14.000 113	3.6 230	35.9 East Texas Broadcasting, I	60.6	39.1
246D Longview	K246CB	CP _C_ TX	72.7 253.0	54.94 BNPFT20130829ACP	32 29 48.7 94 44 31.6	0.250 66	1.1 167	11.7 Houston Christian Broadcas	41.1	42.2
251C Texarkana	KTAL-FM	CP _CX TX	62.8 243.5	135.97 BPH20110516ABT	32 54 11.0 94 00 20.0	100.000 484	12.5 554	86.1 Access.1 Loui si ana Hol ding	110.5	48.9

Terrain database is NED 03 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= 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.

K248CC.X

BLFT20140106DFZ

Latitude: 32-21-05 N

Longitude: 095-18-06 W

ERP: 0.205 kW

Channel: 248

Frequency: 97.5 MHz

AMSL Height: 246.5 m

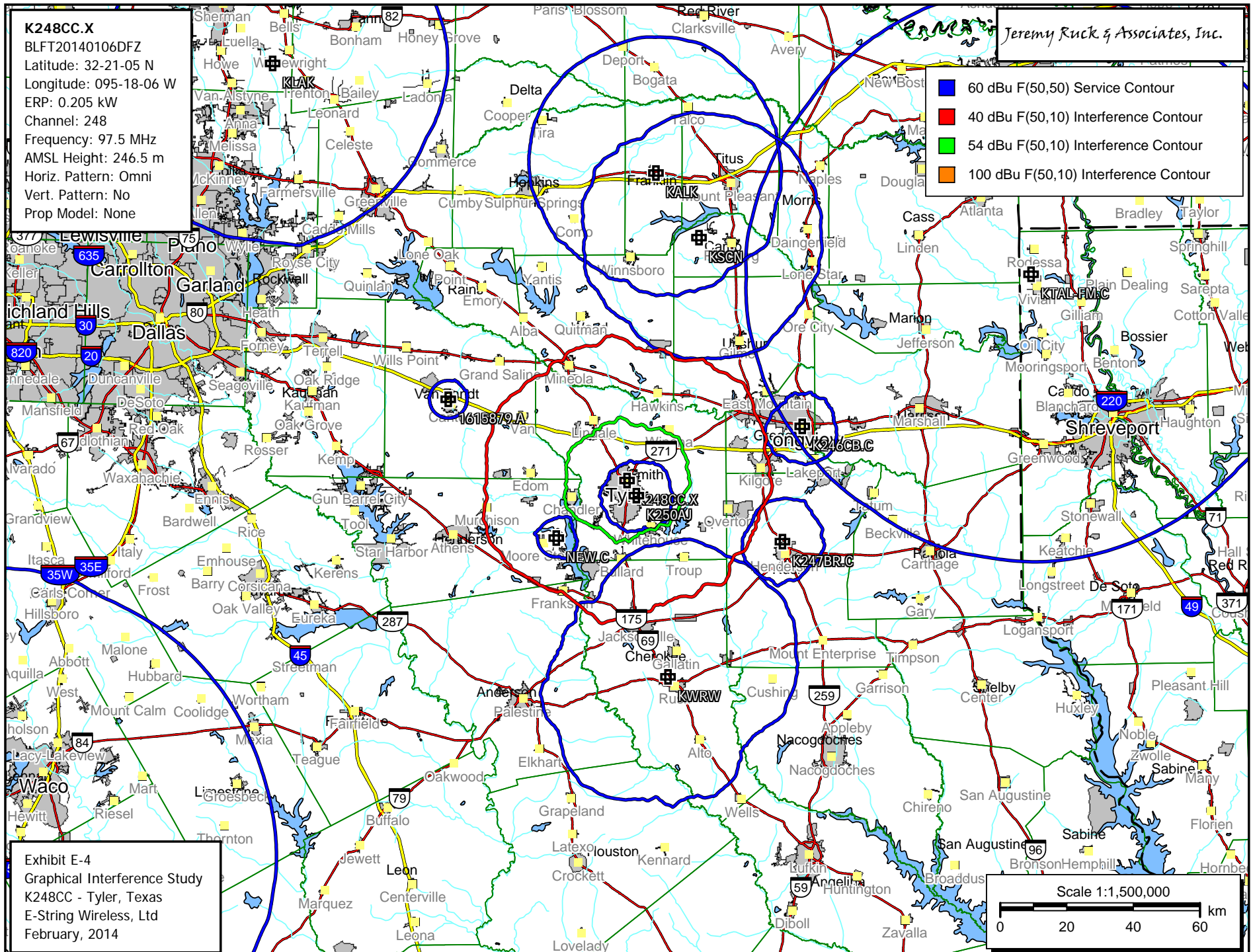
Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

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- 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



K248CC.X

BLFT20140106DFZ
Latitude: 32-21-05 N
Longitude: 095-18-06 W
ERP: 0.205 kW
Channel: 248
Frequency: 97.5 MHz
AMSL Height: 246.5 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

K250AJ

BLFT20100618AYV
Latitude: 32-18-38 N
Longitude: 095-16-19 W
ERP: 0.165 kW
Channel: 250
Frequency: 97.9 MHz
AMSL Height: 230.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Exhibit E-5
Interference Study
K248CC - Tyler, Texas
E-String Wireless, Ltd
February, 2014

Proposed K248CC
Transmitter Site

Jeremy Ruck & Associates, Inc.

K250AJ 71.3 dBu
Service Contour

FCC F(50-50) 71.30 dBu (FCC HAAT)

K250AJ

K250AJ Transmitter Site

Scale 1:100,000

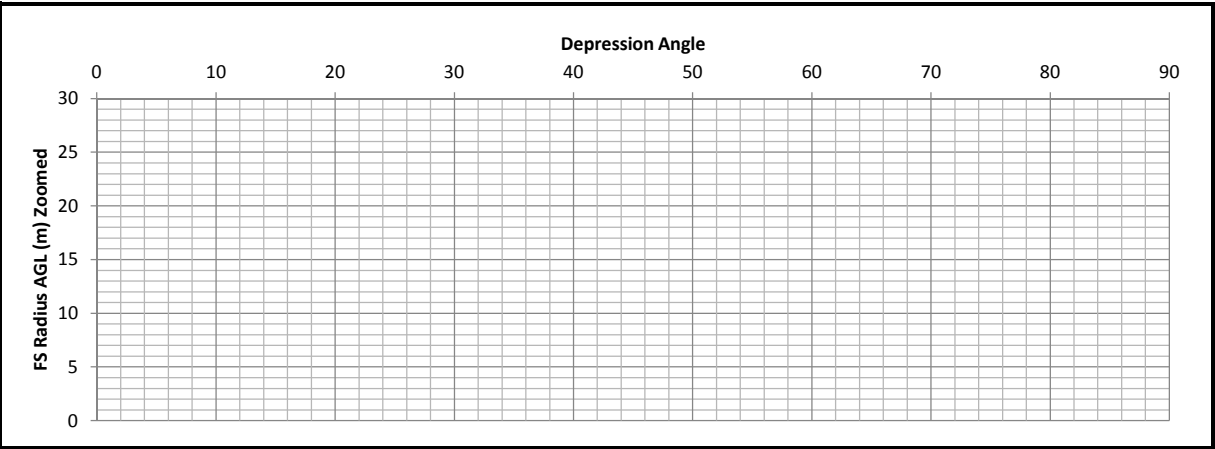
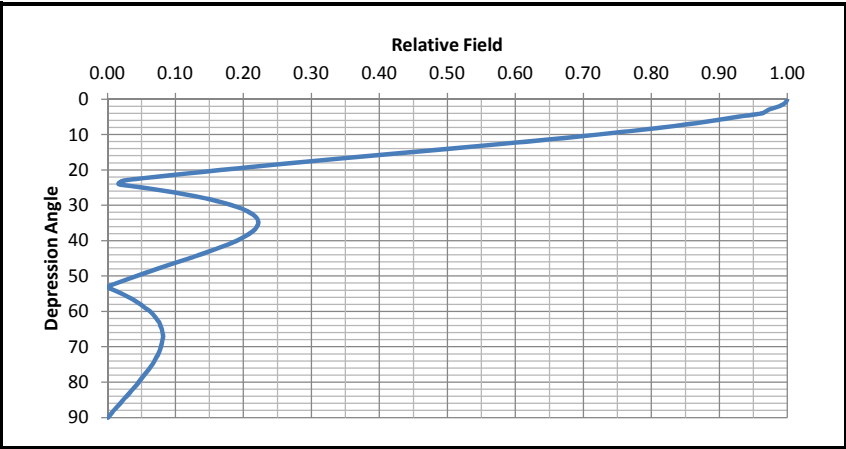
0 1 2 3 km

Exhibit E-6

Proximity Interference Analysis

K248CC - Tyler, Texas

Antenna No:	48	<div><div></div><div></div><div></div></div>	Center of Radiation:	80 m AGL
Manufacturer:	PSI	<div><div></div><div></div><div></div></div>	Effective Radiated Power:	205 Watts
Model:	PSIFML-4/0.625		FS Contour:	111.3 dBu
Number of Bays:	4		E Field Strength:	0.36728 V/m
Bay Spacing:	0.625		Z0 (Ohms):	377 Ohms
			Power Density:	0.000357815 W/m^2



Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	205.00	273.44	273.44	0.00	80.00
1	0.9970	0.9940	203.77	272.62	272.58	4.76	75.24
2	0.9880	0.9761	200.11	270.16	270.00	9.43	70.57
3	0.9720	0.9448	193.68	265.79	265.42	13.91	66.09
4	0.9620	0.9254	189.72	263.05	262.41	18.35	61.65
5	0.9250	0.8556	175.40	252.93	251.97	22.04	57.96
6	0.8930	0.7974	163.48	244.18	242.85	25.52	54.48
7	0.8560	0.7327	150.21	234.07	232.32	28.53	51.47
8	0.8150	0.6642	136.17	222.85	220.69	31.02	48.98
9	0.7690	0.5914	121.23	210.28	207.69	32.89	47.11
10	0.7200	0.5184	106.27	196.88	193.89	34.19	45.81
11	0.6690	0.4476	91.75	182.93	179.57	34.91	45.09
12	0.6150	0.3782	77.54	168.17	164.49	34.96	45.04
13	0.5590	0.3125	64.06	152.85	148.94	34.38	45.62
14	0.5020	0.2520	51.66	137.27	133.19	33.21	46.79
15	0.4440	0.1971	40.41	121.41	117.27	31.42	48.58
16	0.3860	0.1490	30.54	105.55	101.46	29.09	50.91
17	0.3290	0.1082	22.19	89.96	86.03	26.30	53.70
18	0.2730	0.0745	15.28	74.65	71.00	23.07	56.93
19	0.2180	0.0475	9.74	59.61	56.36	19.41	60.59
20	0.1660	0.0276	5.65	45.39	42.65	15.52	64.48
21	0.1160	0.0135	2.76	31.72	29.61	11.37	68.63
22	0.0680	0.0046	0.95	18.59	17.24	6.97	73.03
23	0.0240	0.0006	0.12	6.56	6.04	2.56	77.44
24	0.0170	0.0003	0.06	4.65	4.25	1.89	78.11
25	0.0540	0.0029	0.60	14.77	13.38	6.24	73.76
26	0.0880	0.0077	1.59	24.06	21.63	10.55	69.45
27	0.1180	0.0139	2.85	32.27	28.75	14.65	65.35
28	0.1440	0.0207	4.25	39.38	34.77	18.49	61.51
29	0.1660	0.0276	5.65	45.39	39.70	22.01	57.99
30	0.1840	0.0339	6.94	50.31	43.57	25.16	54.84
31	0.1990	0.0396	8.12	54.41	46.64	28.03	51.97
32	0.2090	0.0437	8.95	57.15	48.47	30.28	49.72
33	0.2170	0.0471	9.65	59.34	49.76	32.32	47.68
34	0.2210	0.0488	10.01	60.43	50.10	33.79	46.21
35	0.2220	0.0493	10.10	60.70	49.73	34.82	45.18
36	0.2200	0.0484	9.92	60.16	48.67	35.36	44.64
37	0.2160	0.0467	9.56	59.06	47.17	35.55	44.45
38	0.2090	0.0437	8.95	57.15	45.03	35.18	44.82
39	0.2000	0.0400	8.20	54.69	42.50	34.42	45.58
40	0.1900	0.0361	7.40	51.95	39.80	33.40	46.60
41	0.1780	0.0317	6.50	48.67	36.73	31.93	48.07
42	0.1640	0.0269	5.51	44.84	33.33	30.01	49.99
43	0.1500	0.0225	4.61	41.02	30.00	27.97	52.03
44	0.1350	0.0182	3.74	36.91	26.55	25.64	54.36
45	0.1200	0.0144	2.95	32.81	23.20	23.20	56.80

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.1200	0.0144	2.95	32.81	23.20	23.20	56.80
46	0.1040	0.0108	2.22	28.44	19.75	20.46	59.54
47	0.0880	0.0077	1.59	24.06	16.41	17.60	62.40
48	0.0720	0.0052	1.06	19.69	13.17	14.63	65.37
49	0.0570	0.0032	0.67	15.59	10.23	11.76	68.24
50	0.0420	0.0018	0.36	11.48	7.38	8.80	71.20
51	0.0280	0.0008	0.16	7.66	4.82	5.95	74.05
52	0.0140	0.0002	0.04	3.83	2.36	3.02	76.98
53	0.0010	0.0000	0.00	0.27	0.16	0.22	79.78
54	0.0100	0.0001	0.02	2.73	1.61	2.21	77.79
55	0.0220	0.0005	0.10	6.02	3.45	4.93	75.07
56	0.0320	0.0010	0.21	8.75	4.89	7.25	72.75
57	0.0410	0.0017	0.34	11.21	6.11	9.40	70.60
58	0.0490	0.0024	0.49	13.40	7.10	11.36	68.64
59	0.0560	0.0031	0.64	15.31	7.89	13.13	66.87
60	0.0630	0.0040	0.81	17.23	8.61	14.92	65.08
61	0.0680	0.0046	0.95	18.59	9.01	16.26	63.74
62	0.0720	0.0052	1.06	19.69	9.24	17.38	62.62
63	0.0760	0.0058	1.18	20.78	9.43	18.52	61.48
64	0.0780	0.0061	1.25	21.33	9.35	19.17	60.83
65	0.0800	0.0064	1.31	21.88	9.24	19.83	60.17
66	0.0810	0.0066	1.35	22.15	9.01	20.23	59.77
67	0.0820	0.0067	1.38	22.42	8.76	20.64	59.36
68	0.0810	0.0066	1.35	22.15	8.30	20.54	59.46
69	0.0800	0.0064	1.31	21.88	7.84	20.42	59.58
70	0.0790	0.0062	1.28	21.60	7.39	20.30	59.70
71	0.0770	0.0059	1.22	21.06	6.85	19.91	60.09
72	0.0750	0.0056	1.15	20.51	6.34	19.50	60.50
73	0.0720	0.0052	1.06	19.69	5.76	18.83	61.17
74	0.0690	0.0048	0.98	18.87	5.20	18.14	61.86
75	0.0660	0.0044	0.89	18.05	4.67	17.43	62.57
76	0.0620	0.0038	0.79	16.95	4.10	16.45	63.55
77	0.0580	0.0034	0.69	15.86	3.57	15.45	64.55
78	0.0540	0.0029	0.60	14.77	3.07	14.44	65.56
79	0.0500	0.0025	0.51	13.67	2.61	13.42	66.58
80	0.0460	0.0021	0.43	12.58	2.18	12.39	67.61
81	0.0420	0.0018	0.36	11.48	1.80	11.34	68.66
82	0.0370	0.0014	0.28	10.12	1.41	10.02	69.98
83	0.0330	0.0011	0.22	9.02	1.10	8.96	71.04
84	0.0280	0.0008	0.16	7.66	0.80	7.61	72.39
85	0.0230	0.0005	0.11	6.29	0.55	6.27	73.73
86	0.0190	0.0004	0.07	5.20	0.36	5.18	74.82
87	0.0140	0.0002	0.04	3.83	0.20	3.82	76.18
88	0.0090	0.0001	0.02	2.46	0.09	2.46	77.54
89	0.0050	0.0000	0.01	1.37	0.02	1.37	78.63
90	0.0010	0.0000	0.00	0.27	0.00	0.27	79.73

