

***COMPREHENSIVE TECHNICAL EXHIBIT  
APPLICATION FOR CONSTRUCTION PERMIT***

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**FM TRANSLATOR STATION K290BO  
LACKLAND CITY, TEXAS  
105.9 MHz / 0.074 kW DA**

**KEILAH RADIO LLC**

**DECEMBER, 2013**

## **APPLICATION FOR CONSTRUCTION PERMIT**

The following engineering statement and attached exhibits have been prepared for **Keilah Radio LLC** ("Keilah"), licensee of FM translator station K290BO at Lackland City, Texas, and are in support of their application for construction permit.<sup>1</sup>

This application seeks to relocate the facility from its current licensed location. As part of this relocation, the technical parameters associated with the facility would necessarily change. Due to the relationship between the current licensed site and the site specified under this application, the applicant proposes a relocation pursuant to the *Mattoon Waiver* concept. As a result of the use of the *Mattoon Waiver*, the primary facility for the translator would be changed.

The proposed facility would operate with a maximum effective radiated power of 74 Watts at a center of radiation of 465 meters AMSL. In order to provide both contour protection to adjacent allocations in the region, and comply with the requirements for an AM translator, a directional antenna would be utilized. The antenna proposed for use by the facility is a custom composite directional array consisting of two Kathrein-Scala HDCA-5CP/RM Yagi style antennas with an equal power division between the two antennas. These two antennas would be oriented at 90 degrees and 200 degrees true.

The proposed facility would serve as a fill-in translator for AM station KAHL at San Antonio, Texas.<sup>2</sup> Exhibit E-1 illustrates the predicted 60 dBu service contour of the proposed translator along with the 2.0 mV/m daytime service contour for KAHL and a circle representing a twenty-five

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<sup>1</sup> The Facility ID for K290BO at Lackland City, Texas is 139129.

<sup>2</sup> The Facility ID for KAHL at San Antonio, Texas is 67070.

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mile radius centered on the KAHL transmitter site.<sup>3</sup> As this exhibit demonstrates, the predicted 60 dBu service contour would be wholly contained within both of these constructs. Exhibit E-2 provides greater detail in the vicinity of the proposed 60 dBu service contour and the KAHL twenty-five mile site radius.

The proposed facility complies with the provisions of Section 74.1204 of the Commission's Rules to relevant facilities in the region. Section 74.1205 is not applicable to the facility due to the channel of operation.

Exhibit E-3 is a tabular spacing study for the proposed facility. As this study demonstrates, the proposed facility would comply with all of the contour overlap provisions of Section 74.1204 of the Commission's Rules to all facilities with the exception of KSMG(FM) at Seguin, Texas.<sup>4</sup> This tabular study is graphically illustrated in Exhibits E-4 and E-5.

Although there would be normally prohibited contour overlap between the proposed facility and KSMG(FM), there would be zero population affected by the potential interference area. Exhibit E-6 depicts the proposed K290BO transmitter site along with the 73.4 dBu service contour of KSMG(FM). As this map demonstrates, this contour intersects the proposed translator transmitter site. Since KSMG operates on a channel second adjacent to the proposed translator, interference to KSMG may potentially occur when the field strength of the translator is at least 40 dB higher than the field strength of KSMG. Specifically this interference may potentially occur in regions where the translator field strength is at least 113.4 dBu.

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<sup>3</sup> All contours in this application for facilities operating within the FM spectrum are based on the use of 3-second linearly interpolated terrain

<sup>4</sup> The Facility ID for KSMG at Seguin, Texas is 34977.

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The power density for the proposed facility at 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 power in Watts, 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:

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

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-7. In addition to the tabular data, Exhibit E-7 also provides several graphs illustrating the calculated interference information. It should be noted that the antenna in use by the facility is a composite directional antenna. The calculations in Exhibit E-7 are based on the maximum proposed ERP for the translator, which would occur at azimuths of 90 and 200 degrees true. Relative field data in Exhibit E-7 was obtained from manufacturer data.

The tabulation in Exhibit E-7 indicates that the maximum distance to the potential interference region at any depression angle is 144.7 meters. The following satellite image

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illustrates the proposed tower location along with a 144.7 meter radius. As this image demonstrates, this maximum radius to the interference region encompasses two structures other than those associated with the proposed tower site and the tower site to the east of the proposed site.



Of these two structures, which are located to the south and west of the proposed site, the more northern of the two is an outbuilding such as a garage or shed. The southern of the two is a two-story residence. This residence lies within a distance range of 109 to 135 meters from the base of the tower. The azimuth range in which this residence lies is 217 to 233 degrees true.

The relative field of the directional antenna pattern proposed for use across this azimuth range decreases with a clockwise change in direction. As a result, the relative field at 217 degrees

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true would be greatest magnitude across the arc of interest, and as such would represent a worst-case scenario for the potential interference from the facility.

At an azimuth of 217 degrees true, the relative field is 0.858 in the horizontal plane. This corresponds to a relative power of 0.7362. Since the maximum effective radiated power is 74 Watts, the effective radiated power in the horizontal plane at this azimuth is 54.5 Watts. The proximity analysis at this ERP is tabulated in Exhibit E-8.

Examining the table in Exhibit E-8, it can be seen that over the horizontal radius range of 109 to 135 meters from the base of the tower, the interference region ranges from 3.5 meters below the site elevation to 27.9 meters above the site elevation. Note that since the maximum distance to the interference region is 124.22 meters across this arc when the directional characteristics of the antenna are considered, the portion of the residence more distant than 124.22 meters from the tower would not be subject to interference.

As the form pages and ASR data for the structure indicate, the site elevation at the base of the tower is 437.1 meters AMSL. This corresponds to an elevation of 1434 feet AMSL. Since the interference region could lie as much as 3.5 meters below this elevation, any potential interference to KSMG from the translator would occur at elevations of no less than 1422.5 feet or 433.6 meters AMSL. The following satellite photograph exaggerates the terrain in the vicinity of the residence and tower site. As it indicates, the elevation at the residence is lower than at the tower site.

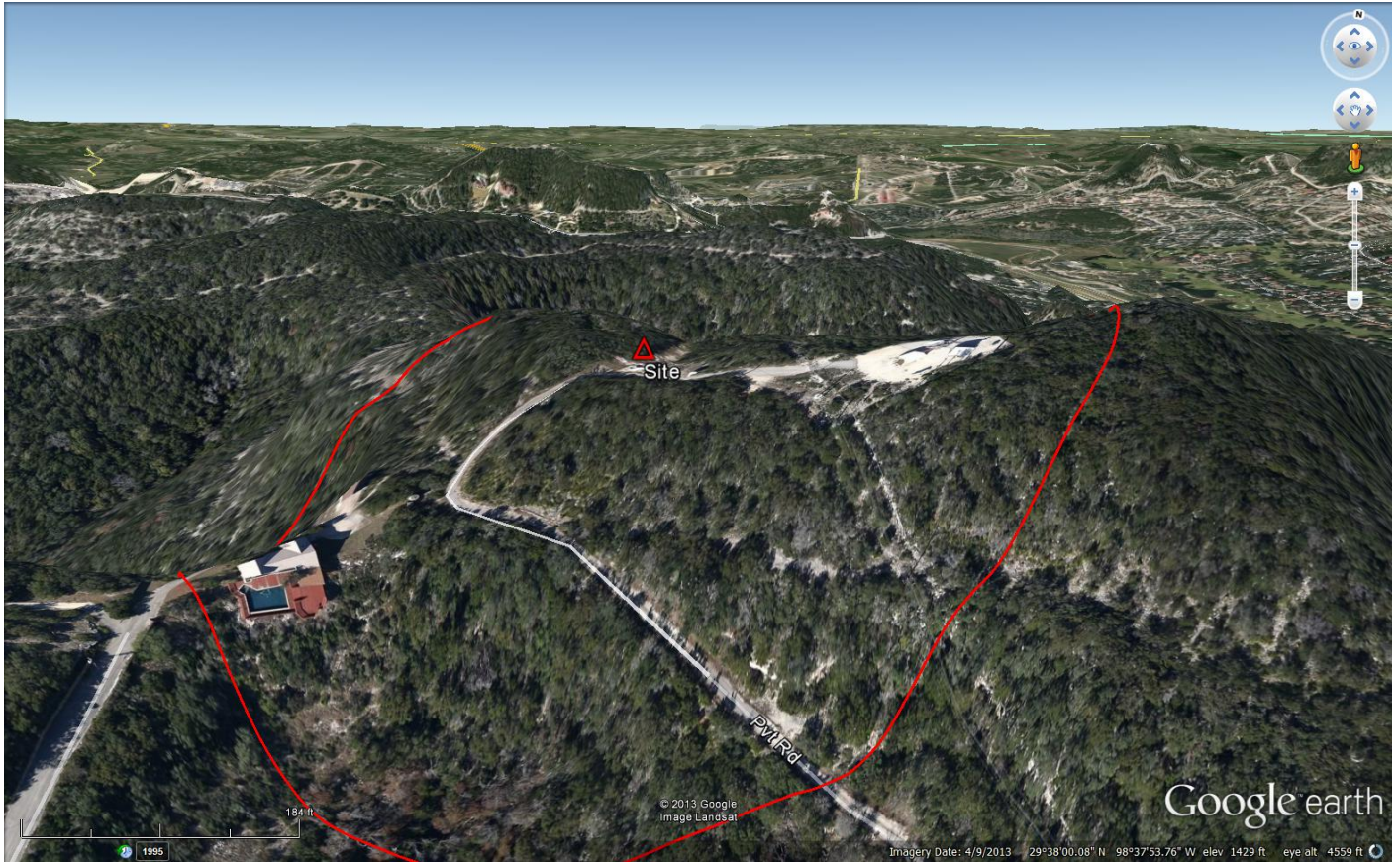
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The elevation at the residence within the absolute maximum interference region is between 1382 and 1395 feet AMSL or between 421.2 meters and 425.2 meters AMSL. A two-story residence will have an elevation of 7 meters AGL. Therefore, the highest point of the residence would fall between elevations of 428.2 meters and 432.2 meters AMSL. This is nearly 1.5 meters below the lowest predicted approach of the interference region. As a result, this residence, and indeed zero population, would be subject to potential interference to KSMG from the proposed translator. The proposed translator therefore would be in compliance with Section 74.1204(d) of the Commission's Rules.

Exhibit E-9 illustrates the 60 dBu F(50,50) and 40 dBu F(50,10) contours for the licensed and proposed K290BO facilities. As this map demonstrates, the 60 dBu service contours do not

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overlap, however, the 40 dBu interfering contour of one overlaps the 60 dBu service contour of the other. As a result, these facilities are mutually exclusive with each other, which is a condition of a *Mattoon Waiver*, as the mutual exclusivity would qualify as a minor change under the less restrictive full-serve rules.

Keilah does not have a history of serial hops to relocate translators. K290BO is the only facility currently licensed to that entry. A review of the Commission's database indicates there have been several construction permits for K290BO. These different construction permits were not, however, the result of Keilah or the previous licensees attempting to hop the translator around various locations. Rather, these construction permits were necessary to avoid interference complaints of full-power facilities, and each of them occurred before Keilah was the licensee of the translator in question.

Finally, KAHL, an AM facility, would serve as the primary facility for the proposed translator. Keilah has obtained retransmission permission from San Antonio Radioworks, LLC, the licensee of KAHL to rebroadcast that facility. The proposed facility therefore complies with this condition of a *Mattoon Waiver* grant.

Since the proposed translator would comply with the necessary conditions to be eligible for a *Mattoon Waiver*, a grant of such a waiver is respectfully requested. A grant of the waiver would allow for additional nighttime coverage of KAHL in the northwestern portion of the San Antonio metropolitan area. KAHL is located nearly twenty-five miles distant from this region, operates with a nominal nighttime power of 280 Watts, and has an interference-free field strength value of 15.27 mV/m. A grant of this waiver would be in the public interest.

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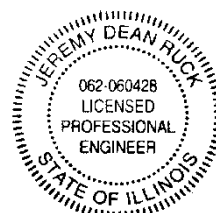
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The proposed facility is exempt from environmental processing, as it would not constitute a substantial environmental impact. The proposed facility would utilize an existing tower that is registered with the Commission. The addition of the K290BO antenna to this structure would not increase the existing environmental impact already present.

In addition, the proposed addition of K290BO to the structure would not result in an RF exposure hazard to persons in the vicinity of the tower. Under a worst case scenario, the proposed facility would result in a power density of  $6.35 \mu\text{W}/\text{cm}^2$  at ground level as calculated by the equations from Appendix A of *OET Bulletin 65*. This value complies with the uncontrolled environment condition. Keilah certifies that it 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, 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, 2015

Jeremy D. Ruck, PE  
December 16, 2013

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BLFT20100914AAE  
Latitude: 29-38-01.10 N  
Longitude: 098-37-53.60 W  
ERP: 0.074 kW  
Channel: 290  
Frequency: 105.9 MHz  
AMSL Height: 465.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

Proposed K290BO  
60 dBu Contour

Jeremy Ruck & Associates, Inc.

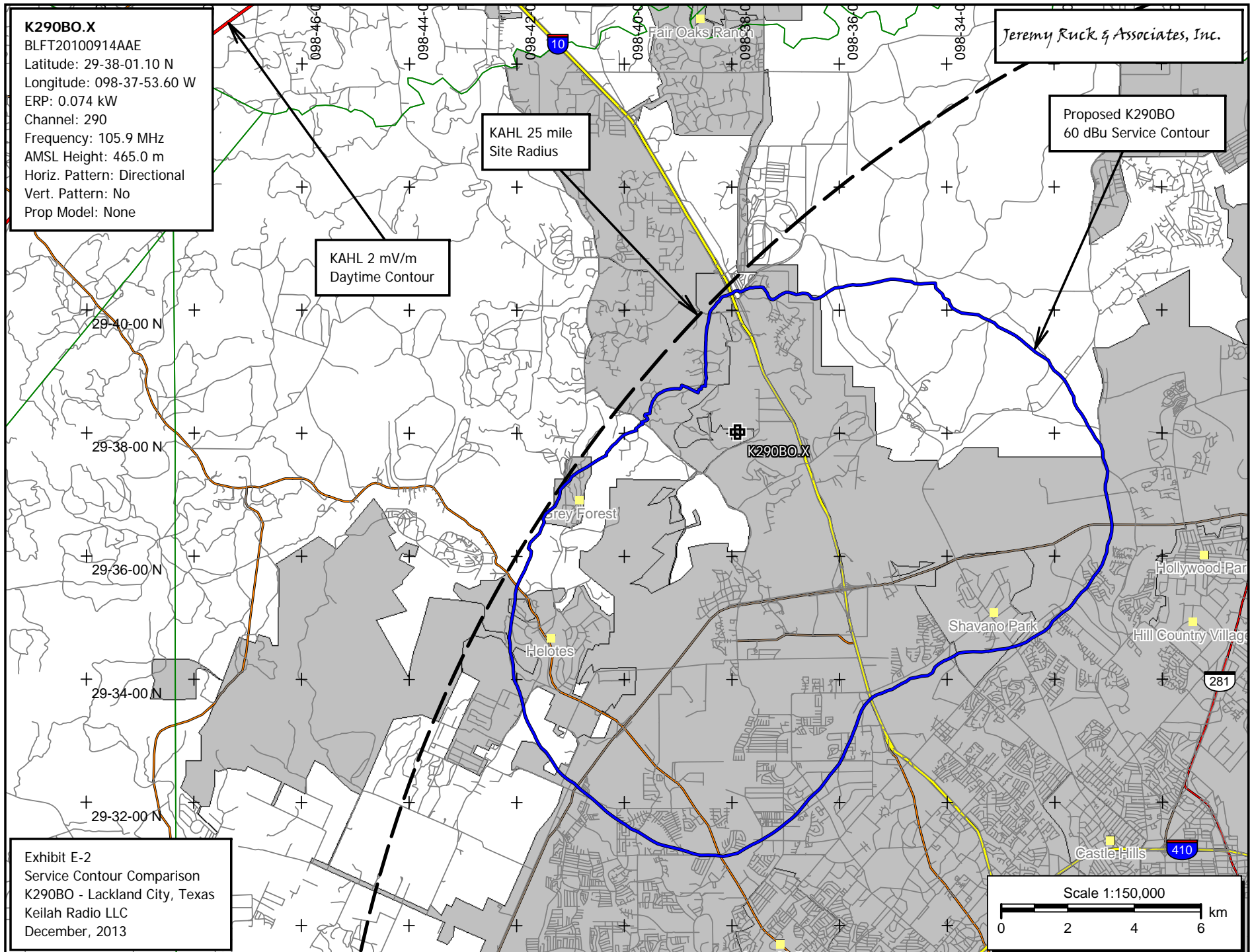
KAHL 25 mile  
Site Radius

KAHL 2 mV/m  
Daytime Contour

Exhibit E-1  
Service Contour Comparison  
K290BO - Lackland City, Texas  
Keilah Radio LLC  
December, 2013

Scale 1:750,000





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

Exhibit E-3 - Tabular Allocation Study

K290B0 - Lackland City, Texas

REFERENCE CH# 290D - 105.9 MHz, Pwr= 0.074 kW DA, HAAT= 103.7 M, COR= 465 M DISPLAY DATES  
29 38 01.1 N. DATA 12-16-13  
98 37 53.6 W. SEARCH 12-16-13  
Average Protected F(50-50)= 9.76 km  
Standard Directional

CH CITY	CALL	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
287CO Seguin	KSMG	LIC _C_ TX	138.2 318.4	53.43 BLH20060427AFC	29 16 29.0 98 15 52.0	100.000 453	12.1 611	83.1 Cox Radio, Inc.	30.9	-30.0*
290A Hondo	KAHL-FM	LIC _CX TX	240.1 59.8	71.00 BLH20090303AAF	29 18 49.0 99 15 59.0	6.000 100	86.8 375	28.0 San Antonio Radioworks, LI	-25.4*	13.2
290D Lackland City	K290B0	LIC DC_ TX	223.6 43.5	23.18 BLFT20100914AAE	29 28 57.0 98 47 48.0	0.099 38	15.6 335	1.6 Keilah Radio LIC	-0.9	-19.1
290C2 Round Rock	KFMK	LIC NCY TX	46.1 226.5	110.89 BLH19980818KB	30 19 23.0 97 47 58.0	4.500 397	113.1 615	45.4 Crista Ministries	-10.2*	41.4
289D San Antonio	K289BN	LIC _C_ TX	149.1 329.1	27.87 BLFT20120509AEN	29 25 06.5 98 29 01.0	0.145 177	20.4 384	13.3 Carlos Lopez	-2.1	0.1
291D Terrell Wells	K292FF	CP DV_ TX	131.6 311.7	29.12 BPFT20120120ABI	29 27 34.0 98 24 24.0	0.150 97	11.9 310	7.9 Calvary Chapel Of Twin Fal	6.5	5.8
290D Seguin	K290CC	CP DC_ TX	86.0 266.3	52.23 BNPFT20130830AOY	29 39 55.0 98 05 32.0	0.250 46	23.8 248	7.1 Wildcatter Wireless, Inc.	17.5	9.6
291A Kerrville	KKVR	LIC NCX TX	311.1 130.8	69.03 BLH20070911ADB	30 02 27.0 99 10 19.0	6.000 100	54.3 657	36.3 Radio Ranch, Ltd	12.0	29.6
292D Terrell Wells	K292FF	LIC DV_ TX	131.6 311.7	29.12 BLFT20070329ADQ	29 27 34.0 98 24 24.0	0.150 97	0.7 310	7.9 Calvary Chapel Of Twin Fal	17.6	20.0
289C3 Fredericksburg	KNAF-FM	LIC ZCX TX	341.6 161.5	85.56 BLH20041217AXT	30 21 49.0 98 54 47.0	9.100 164	63.8 754	43.1 Hill Country Broadcasting,	17.7	37.3

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.  
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.  
Reference station has protected zone issue:



BLFT20100914AAE  
Latitude: 29-38-01.10 N  
Longitude: 098-37-53.60 W  
ERP: 0.074 kW  
Channel: 290  
Frequency: 105.9 MHz  
AMSL Height: 465.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None





-  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-4  
Graphical Allocation Study  
K290BO - Lackland City, Texas  
Keilah Radio LLC  
December, 2013

Scale 1:750,000



**K290BO.X**

BLFT20100914AAE

Latitude: 29-38-01.10 N

Longitude: 098-37-53.60 W

ERP: 0.074 kW

Channel: 290

Frequency: 105.9 MHz

AMSL Height: 465.0 m

Horiz. Pattern: Directional

Vert. Pattern: No

Prop Model: None

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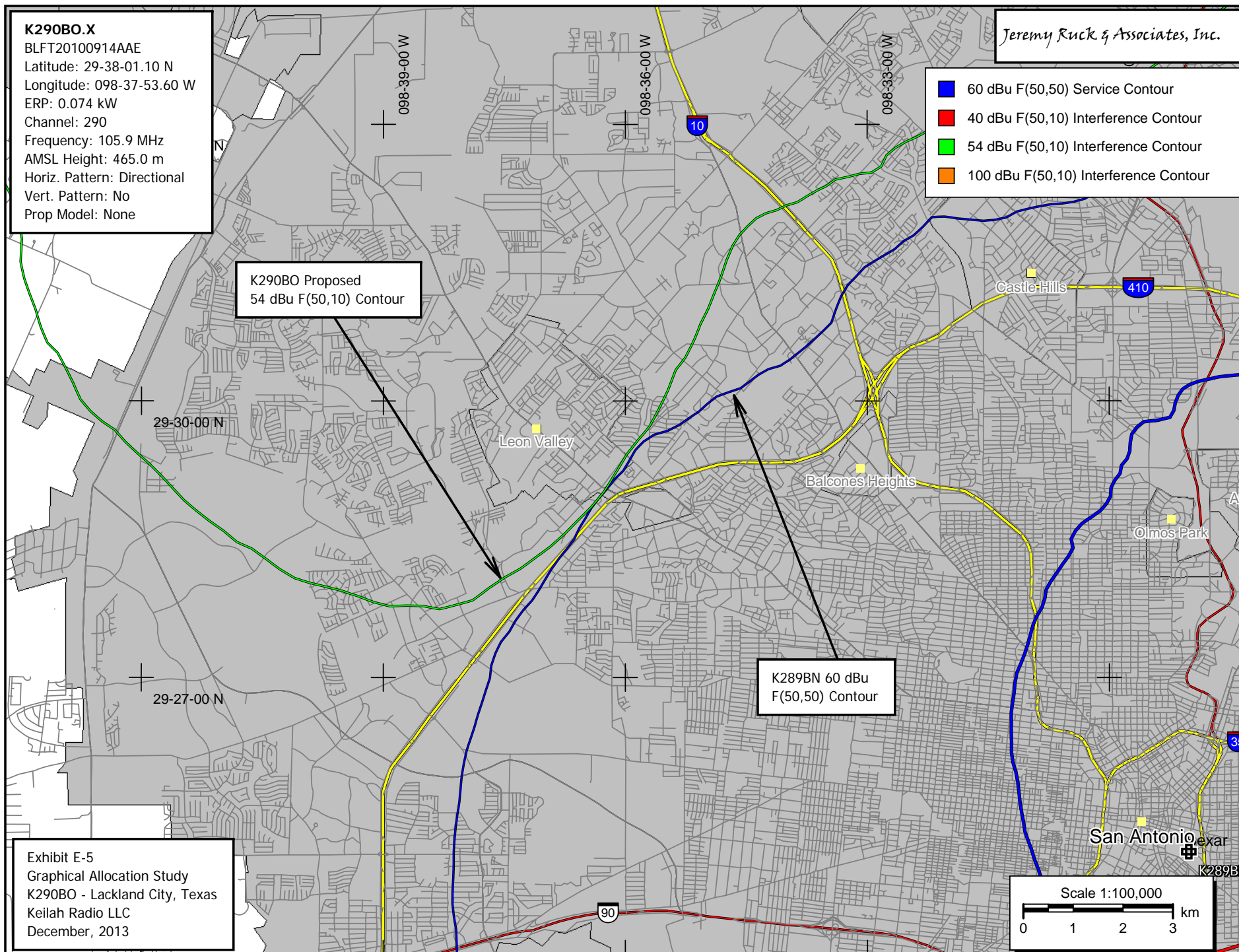
- 60 dBu F(50,50) Service Contour
- 40 dBu F(50,10) Interference Contour
- 54 dBu F(50,10) Interference Contour
- 100 dBu F(50,10) Interference Contour

K290BO Proposed  
54 dBu F(50,10) Contour

K289BN 60 dBu  
F(50,50) Contour

Exhibit E-5  
Graphical Allocation Study  
K290BO - Lackland City, Texas  
Keilah Radio LLC  
December, 2013

Scale 1:100,000  
0 1 2 3 km



**K290BO.X**

BLFT20100914AAE  
Latitude: 29-38-01.10 N  
Longitude: 098-37-53.60 W  
ERP: 0.074 kW  
Channel: 290  
Frequency: 105.9 MHz  
AMSL Height: 465.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**KSMG**

BLH20060427AFC  
Latitude: 29-16-29 N  
Longitude: 098-15-52 W  
ERP: 100.00 kW  
Channel: 287  
Frequency: 105.3 MHz  
AMSL Height: 611.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

Exhibit E-6  
Interference Study  
K290BO - Lackland City, Texas  
Keilah Radio LLC  
December, 2013

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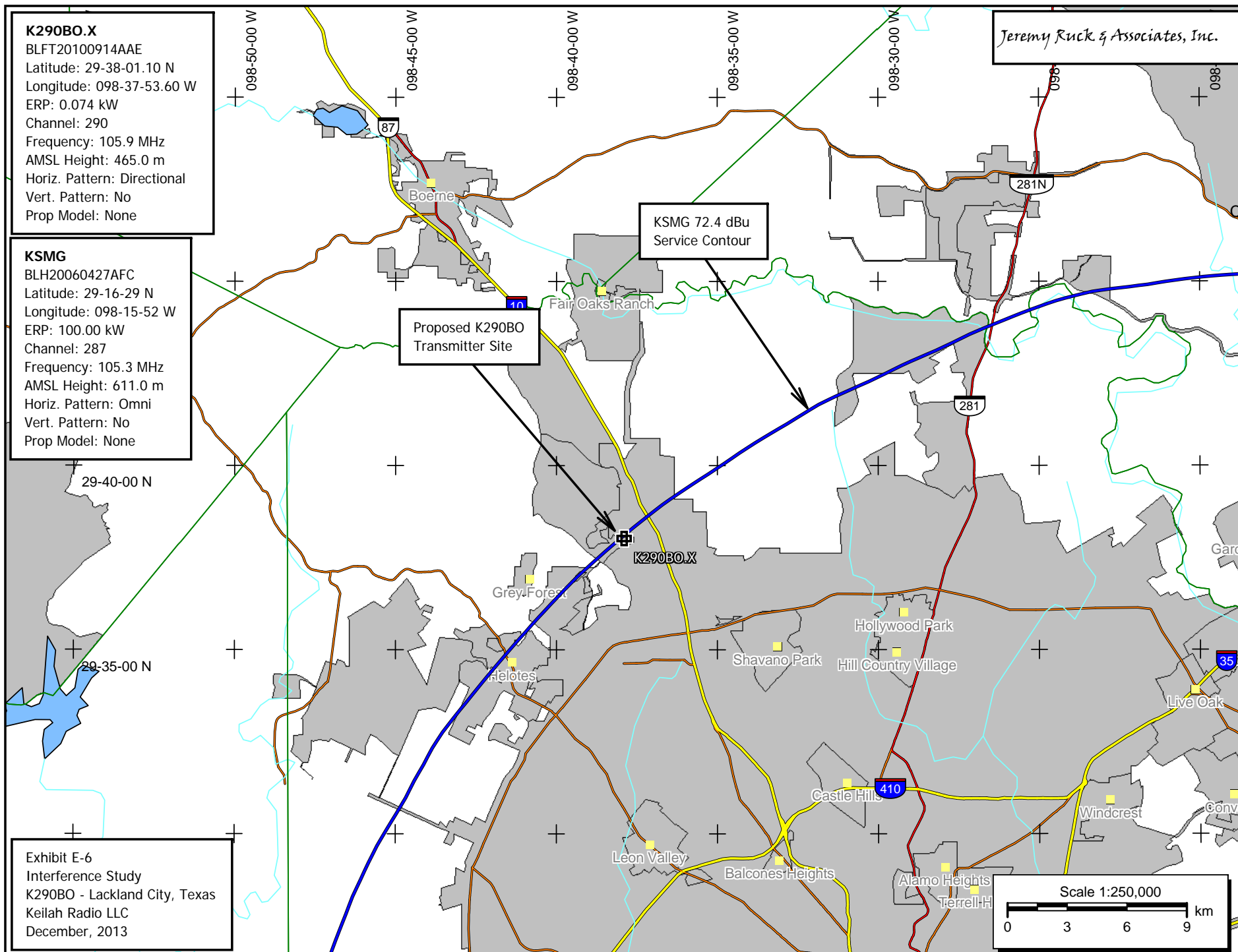
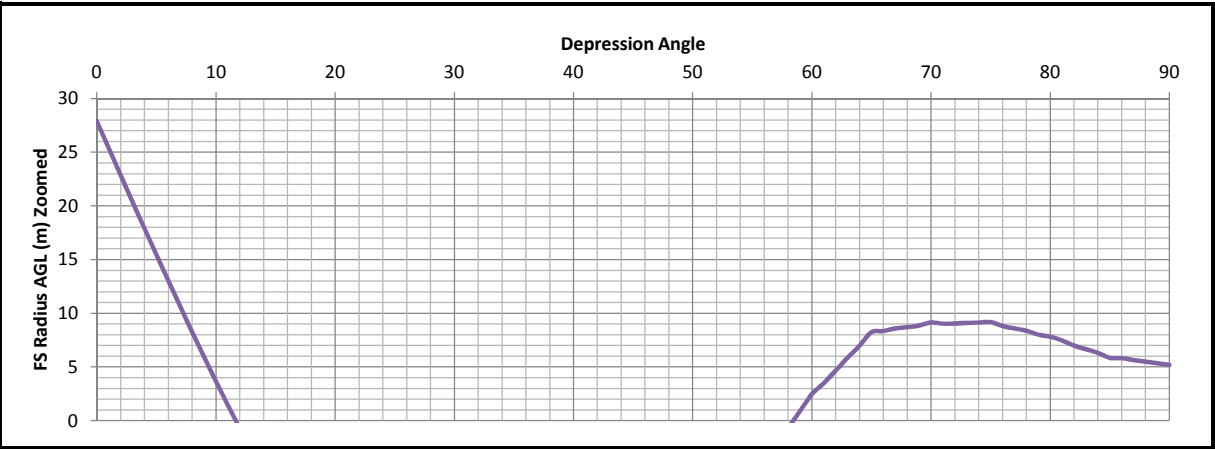
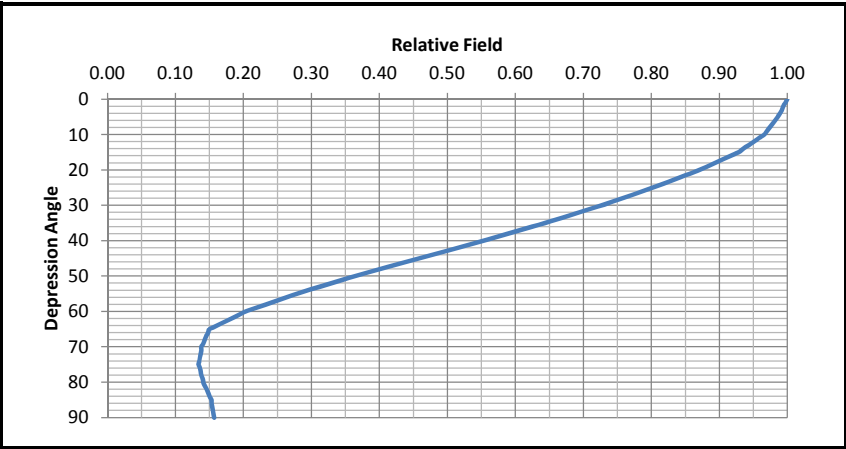


Exhibit E-7

Proximity Interference Analysis

K290BO - Lackland City, TX

Antenna No:	68	⬆	⬆	Center of Radiation:	27.9 m AGL
Manufacturer:	Scala	⬆	⬆	Effective Radiated Power:	74 Watts
Model:	HDCA-SCP			FS Contour:	112.4 dBu
Number of Bays:	N/A			E Field Strength:	0.41687 V/m
Bay Spacing:	Log			Z0 (Ohms):	377 Ohms
				Power Density:	0.000460955 W/m^2



Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	74.00	144.74	144.74	0.00	27.90
1	0.9970	0.9940	73.56	144.31	144.29	2.52	25.38
2	0.9940	0.9880	73.11	143.88	143.79	5.02	22.88
3	0.9920	0.9841	72.82	143.59	143.39	7.51	20.39
4	0.9890	0.9781	72.38	143.15	142.80	9.99	17.91
5	0.9860	0.9722	71.94	142.72	142.18	12.44	15.46
6	0.9820	0.9643	71.36	142.14	141.36	14.86	13.04
7	0.9780	0.9565	70.78	141.56	140.51	17.25	10.65
8	0.9740	0.9487	70.20	140.98	139.61	19.62	8.28
9	0.9700	0.9409	69.63	140.40	138.67	21.96	5.94
10	0.9660	0.9332	69.05	139.82	137.70	24.28	3.62
11	0.9580	0.9178	67.91	138.67	136.12	26.46	1.44
12	0.9510	0.9044	66.93	137.65	134.64	28.62	-0.72
13	0.9430	0.8892	65.80	136.49	133.00	30.70	-2.80
14	0.9350	0.8742	64.69	135.34	131.32	32.74	-4.84
15	0.9280	0.8612	63.73	134.32	129.75	34.77	-6.87
16	0.9160	0.8391	62.09	132.59	127.45	36.55	-8.65
17	0.9050	0.8190	60.61	130.99	125.27	38.30	-10.40
18	0.8940	0.7992	59.14	129.40	123.07	39.99	-12.09
19	0.8820	0.7779	57.57	127.67	120.71	41.56	-13.66
20	0.8710	0.7586	56.14	126.07	118.47	43.12	-15.22
21	0.8570	0.7344	54.35	124.05	115.81	44.45	-16.55
22	0.8430	0.7106	52.59	122.02	113.13	45.71	-17.81
23	0.8300	0.6889	50.98	120.14	110.59	46.94	-19.04
24	0.8160	0.6659	49.27	118.11	107.90	48.04	-20.14
25	0.8020	0.6432	47.60	116.09	105.21	49.06	-21.16
26	0.7870	0.6194	45.83	113.91	102.39	49.94	-22.04
27	0.7720	0.5960	44.10	111.74	99.56	50.73	-22.83
28	0.7570	0.5730	42.41	109.57	96.75	51.44	-23.54
29	0.7420	0.5506	40.74	107.40	93.93	52.07	-24.17
30	0.7270	0.5285	39.11	105.23	91.13	52.61	-24.71
31	0.7100	0.5041	37.30	102.77	88.09	52.93	-25.03
32	0.6930	0.4802	35.54	100.31	85.07	53.16	-25.26
33	0.6770	0.4583	33.92	97.99	82.18	53.37	-25.47
34	0.6600	0.4356	32.23	95.53	79.20	53.42	-25.52
35	0.6430	0.4134	30.60	93.07	76.24	53.38	-25.48
36	0.6250	0.3906	28.91	90.47	73.19	53.17	-25.27
37	0.6070	0.3684	27.27	87.86	70.17	52.88	-24.98
38	0.5890	0.3469	25.67	85.25	67.18	52.49	-24.59
39	0.5710	0.3260	24.13	82.65	64.23	52.01	-24.11
40	0.5530	0.3058	22.63	80.04	61.32	51.45	-23.55
41	0.5340	0.2852	21.10	77.29	58.33	50.71	-22.81
42	0.5150	0.2652	19.63	74.54	55.40	49.88	-21.98
43	0.4960	0.2460	18.21	71.79	52.51	48.96	-21.06
44	0.4770	0.2275	16.84	69.04	49.67	47.96	-20.06
45	0.4580	0.2098	15.52	66.29	46.88	46.88	-18.98

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.4580	0.2098	15.52	66.29	46.88	46.88	-18.98
46	0.4390	0.1927	14.26	63.54	44.14	45.71	-17.81
47	0.4200	0.1764	13.05	60.79	41.46	44.46	-16.56
48	0.4010	0.1608	11.90	58.04	38.84	43.13	-15.23
49	0.3820	0.1459	10.80	55.29	36.28	41.73	-13.83
50	0.3630	0.1318	9.75	52.54	33.77	40.25	-12.35
51	0.3460	0.1197	8.86	50.08	31.52	38.92	-11.02
52	0.3290	0.1082	8.01	47.62	29.32	37.53	-9.63
53	0.3120	0.0973	7.20	45.16	27.18	36.07	-8.17
54	0.2950	0.0870	6.44	42.70	25.10	34.54	-6.64
55	0.2780	0.0773	5.72	40.24	23.08	32.96	-5.06
56	0.2630	0.0692	5.12	38.07	21.29	31.56	-3.66
57	0.2480	0.0615	4.55	35.90	19.55	30.11	-2.21
58	0.2330	0.0543	4.02	33.73	17.87	28.60	-0.70
59	0.2180	0.0475	3.52	31.55	16.25	27.05	0.85
60	0.2030	0.0412	3.05	29.38	14.69	25.45	2.45
61	0.1930	0.0372	2.76	27.94	13.54	24.43	3.47
62	0.1820	0.0331	2.45	26.34	12.37	23.26	4.64
63	0.1710	0.0292	2.16	24.75	11.24	22.05	5.85
64	0.1610	0.0259	1.92	23.30	10.22	20.95	6.95
65	0.1500	0.0225	1.67	21.71	9.18	19.68	8.22
66	0.1480	0.0219	1.62	21.42	8.71	19.57	8.33
67	0.1450	0.0210	1.56	20.99	8.20	19.32	8.58
68	0.1430	0.0204	1.51	20.70	7.75	19.19	8.71
69	0.1410	0.0199	1.47	20.41	7.31	19.05	8.85
70	0.1380	0.0190	1.41	19.97	6.83	18.77	9.13
71	0.1380	0.0190	1.41	19.97	6.50	18.89	9.01
72	0.1370	0.0188	1.39	19.83	6.13	18.86	9.04
73	0.1360	0.0185	1.37	19.69	5.76	18.83	9.07
74	0.1350	0.0182	1.35	19.54	5.39	18.78	9.12
75	0.1340	0.0180	1.33	19.40	5.02	18.73	9.17
76	0.1360	0.0185	1.37	19.69	4.76	19.10	8.80
77	0.1370	0.0188	1.39	19.83	4.46	19.32	8.58
78	0.1380	0.0190	1.41	19.97	4.15	19.54	8.36
79	0.1400	0.0196	1.45	20.26	3.87	19.89	8.01
80	0.1410	0.0199	1.47	20.41	3.54	20.10	7.80
81	0.1430	0.0204	1.51	20.70	3.24	20.44	7.46
82	0.1460	0.0213	1.58	21.13	2.94	20.93	6.97
83	0.1480	0.0219	1.62	21.42	2.61	21.26	6.64
84	0.1500	0.0225	1.67	21.71	2.27	21.59	6.31
85	0.1530	0.0234	1.73	22.15	1.93	22.06	5.84
86	0.1530	0.0234	1.73	22.15	1.54	22.09	5.81
87	0.1540	0.0237	1.75	22.29	1.17	22.26	5.64
88	0.1550	0.0240	1.78	22.44	0.78	22.42	5.48
89	0.1560	0.0243	1.80	22.58	0.39	22.58	5.32
90	0.1570	0.0246	1.82	22.72	0.00	22.72	5.18

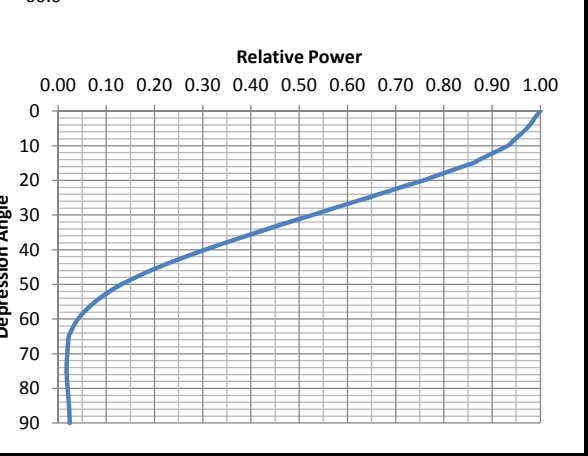
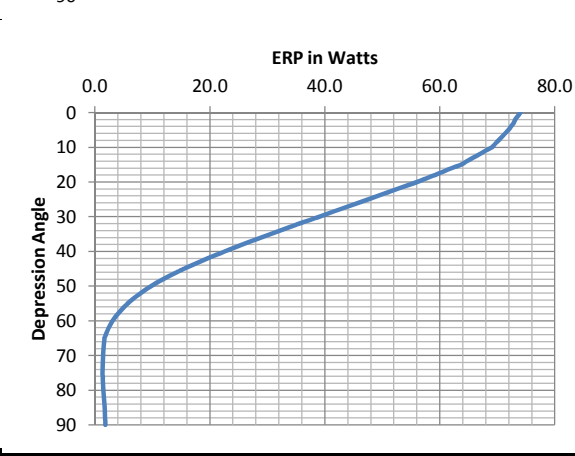
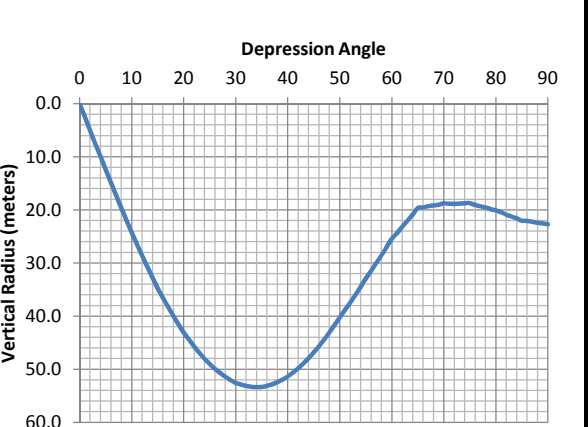
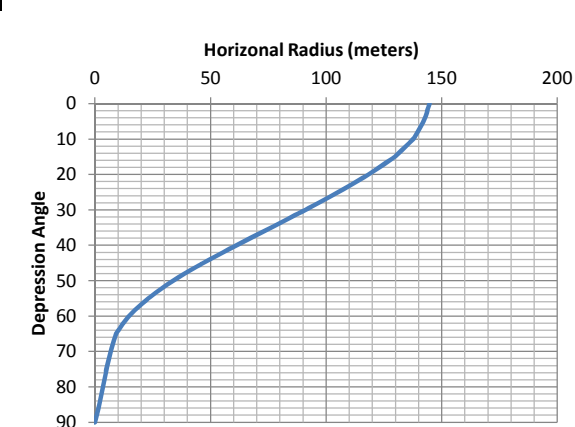
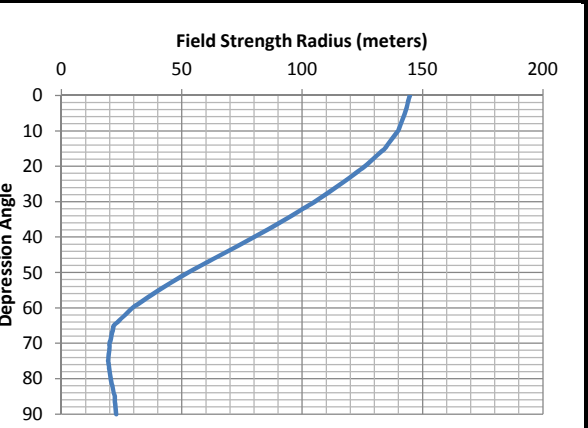
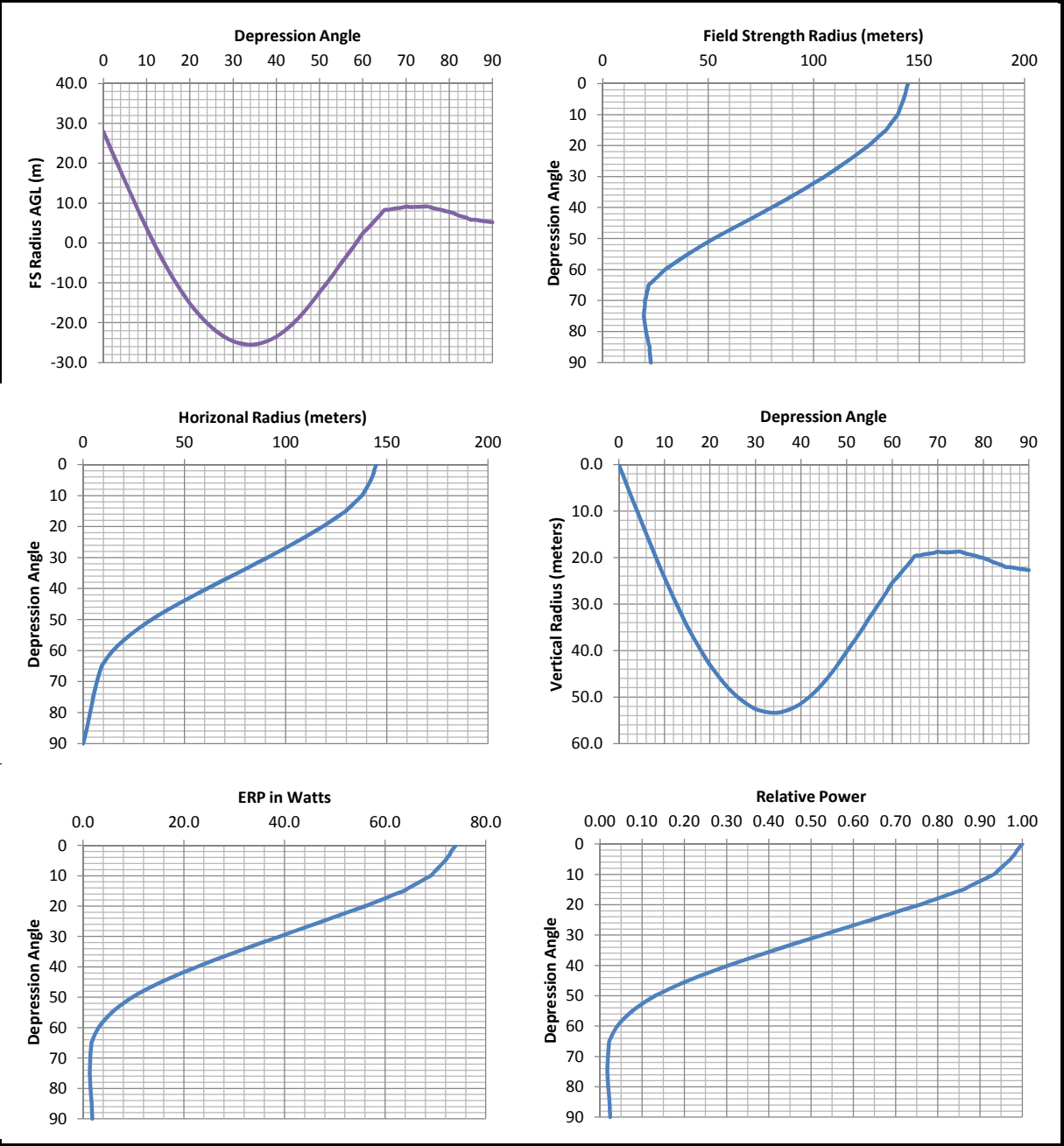
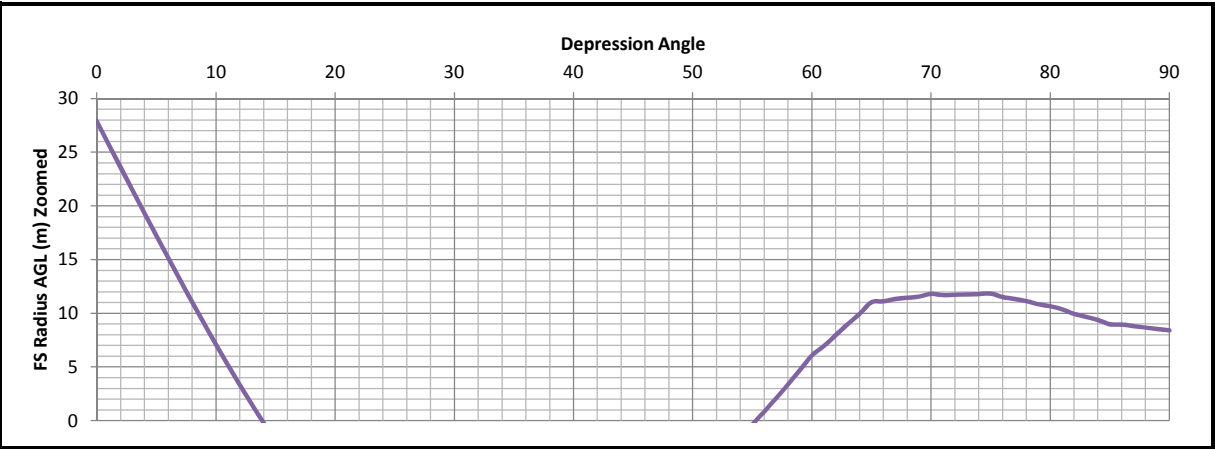
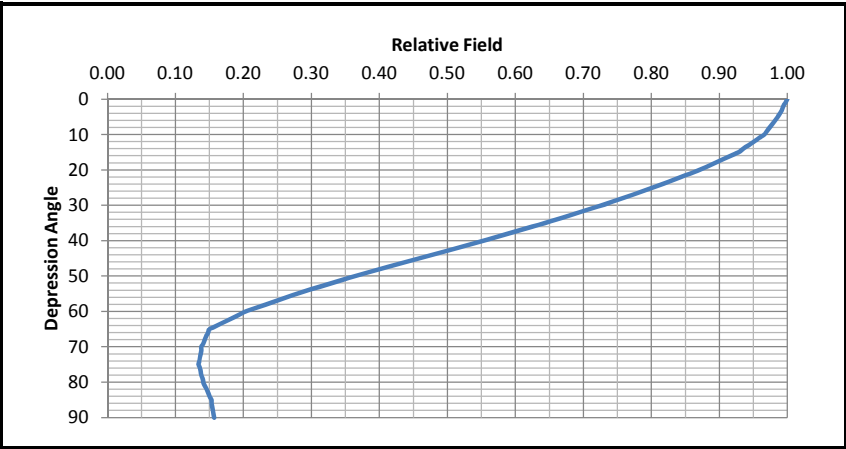


Exhibit E-8

Proximity Interference Analysis

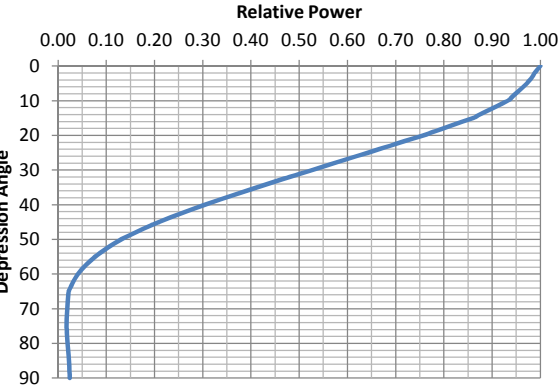
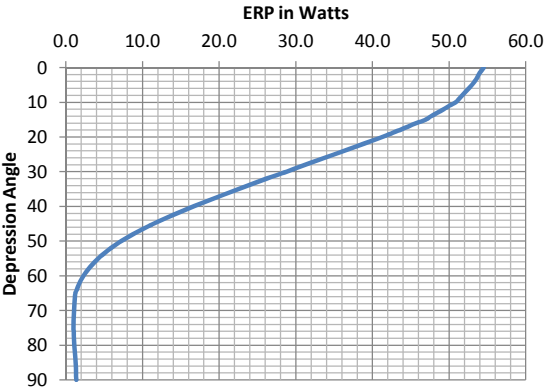
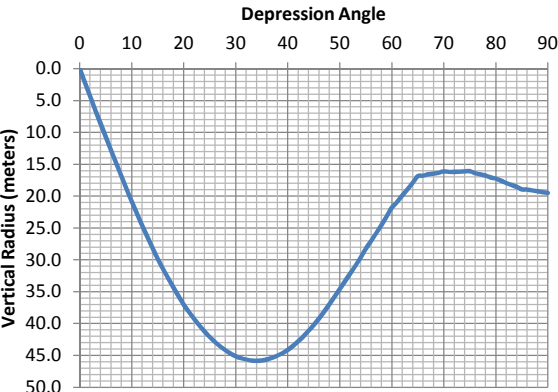
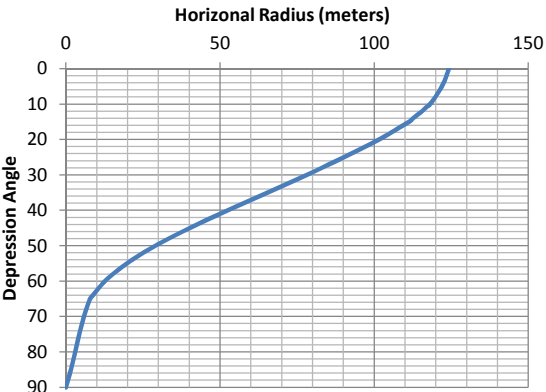
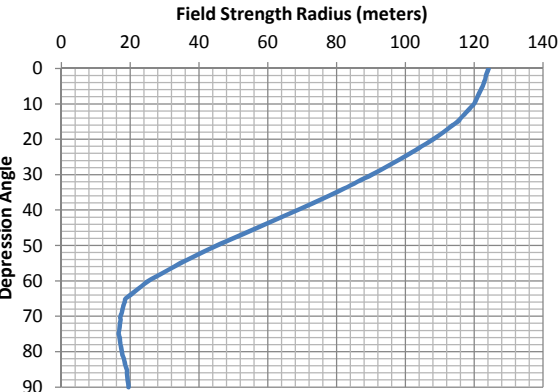
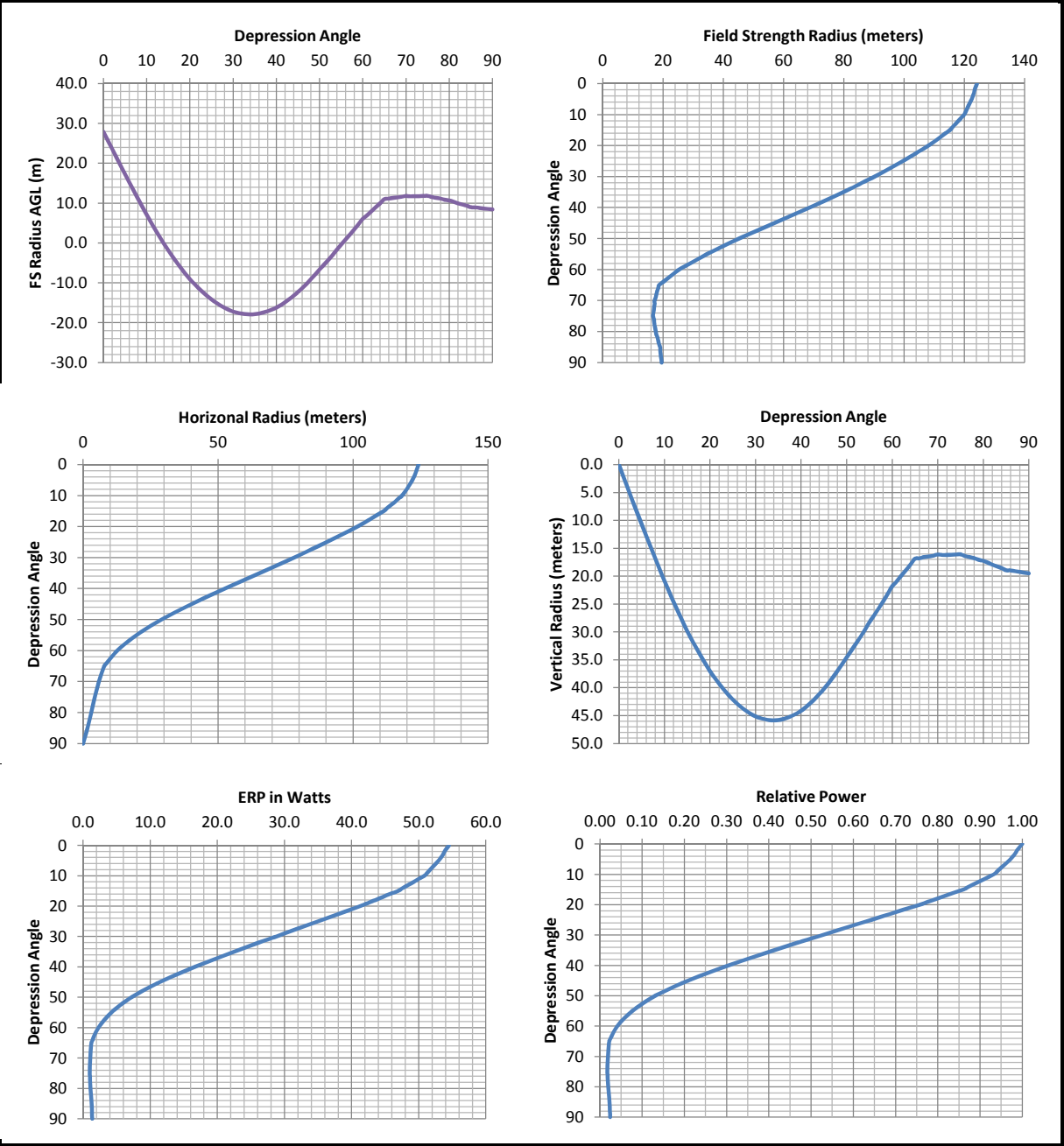
K290BO - Lackland City, TX

Antenna No:	68	<div><div></div><div></div><div></div></div>	Center of Radiation:	27.9 m AGL
Manufacturer:	Scala	<div><div></div><div></div><div></div></div>	Effective Radiated Power:	54.5 Watts
Model:	HDCA-SCP		FS Contour:	112.4 dBu
Number of Bays:	N/A		E Field Strength:	0.41687 V/m
Bay Spacing:	Log		Z0 (Ohms):	377 Ohms
			Power Density:	0.000460955 W/m^2



Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	54.50	124.22	124.22	0.00	27.90
1	0.9970	0.9940	54.17	123.85	123.83	2.16	25.74
2	0.9940	0.9880	53.85	123.47	123.40	4.31	23.59
3	0.9920	0.9841	53.63	123.22	123.06	6.45	21.45
4	0.9890	0.9781	53.31	122.85	122.55	8.57	19.33
5	0.9860	0.9722	52.98	122.48	122.01	10.67	17.23
6	0.9820	0.9643	52.56	121.98	121.31	12.75	15.15
7	0.9780	0.9565	52.13	121.49	120.58	14.81	13.09
8	0.9740	0.9487	51.70	120.99	119.81	16.84	11.06
9	0.9700	0.9409	51.28	120.49	119.01	18.85	9.05
10	0.9660	0.9332	50.86	119.99	118.17	20.84	7.06
11	0.9580	0.9178	50.02	119.00	116.81	22.71	5.19
12	0.9510	0.9044	49.29	118.13	115.55	24.56	3.34
13	0.9430	0.8892	48.46	117.14	114.14	26.35	1.55
14	0.9350	0.8742	47.65	116.14	112.69	28.10	-0.20
15	0.9280	0.8612	46.93	115.27	111.35	29.84	-1.94
16	0.9160	0.8391	45.73	113.78	109.38	31.36	-3.46
17	0.9050	0.8190	44.64	112.42	107.51	32.87	-4.97
18	0.8940	0.7992	43.56	111.05	105.62	34.32	-6.42
19	0.8820	0.7779	42.40	109.56	103.59	35.67	-7.77
20	0.8710	0.7586	41.35	108.19	101.67	37.00	-9.10
21	0.8570	0.7344	40.03	106.46	99.38	38.15	-10.25
22	0.8430	0.7106	38.73	104.72	97.09	39.23	-11.33
23	0.8300	0.6889	37.55	103.10	94.91	40.28	-12.38
24	0.8160	0.6659	36.29	101.36	92.60	41.23	-13.33
25	0.8020	0.6432	35.05	99.62	90.29	42.10	-14.20
26	0.7870	0.6194	33.76	97.76	87.87	42.86	-14.96
27	0.7720	0.5960	32.48	95.90	85.44	43.54	-15.64
28	0.7570	0.5730	31.23	94.03	83.03	44.15	-16.25
29	0.7420	0.5506	30.01	92.17	80.61	44.68	-16.78
30	0.7270	0.5285	28.80	90.31	78.21	45.15	-17.25
31	0.7100	0.5041	27.47	88.20	75.60	45.42	-17.52
32	0.6930	0.4802	26.17	86.08	73.00	45.62	-17.72
33	0.6770	0.4583	24.98	84.10	70.53	45.80	-17.90
34	0.6600	0.4356	23.74	81.98	67.97	45.84	-17.94
35	0.6430	0.4134	22.53	79.87	65.43	45.81	-17.91
36	0.6250	0.3906	21.29	77.64	62.81	45.63	-17.73
37	0.6070	0.3684	20.08	75.40	60.22	45.38	-17.48
38	0.5890	0.3469	18.91	73.16	57.65	45.04	-17.14
39	0.5710	0.3260	17.77	70.93	55.12	44.64	-16.74
40	0.5530	0.3058	16.67	68.69	52.62	44.15	-16.25
41	0.5340	0.2852	15.54	66.33	50.06	43.52	-15.62
42	0.5150	0.2652	14.45	63.97	47.54	42.81	-14.91
43	0.4960	0.2460	13.41	61.61	45.06	42.02	-14.12
44	0.4770	0.2275	12.40	59.25	42.62	41.16	-13.26
45	0.4580	0.2098	11.43	56.89	40.23	40.23	-12.33

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.4580	0.2098	11.43	56.89	40.23	40.23	-12.33
46	0.4390	0.1927	10.50	54.53	37.88	39.23	-11.33
47	0.4200	0.1764	9.61	52.17	35.58	38.16	-10.26
48	0.4010	0.1608	8.76	49.81	33.33	37.02	-9.12
49	0.3820	0.1459	7.95	47.45	31.13	35.81	-7.91
50	0.3630	0.1318	7.18	45.09	28.98	34.54	-6.64
51	0.3460	0.1197	6.52	42.98	27.05	33.40	-5.50
52	0.3290	0.1082	5.90	40.87	25.16	32.20	-4.30
53	0.3120	0.0973	5.31	38.76	23.32	30.95	-3.05
54	0.2950	0.0870	4.74	36.64	21.54	29.65	-1.75
55	0.2780	0.0773	4.21	34.53	19.81	28.29	-0.39
56	0.2630	0.0692	3.77	32.67	18.27	27.08	0.82
57	0.2480	0.0615	3.35	30.81	16.78	25.84	2.06
58	0.2330	0.0543	2.96	28.94	15.34	24.54	3.36
59	0.2180	0.0475	2.59	27.08	13.95	23.21	4.69
60	0.2030	0.0412	2.25	25.22	12.61	21.84	6.06
61	0.1930	0.0372	2.03	23.97	11.62	20.97	6.93
62	0.1820	0.0331	1.81	22.61	10.61	19.96	7.94
63	0.1710	0.0292	1.59	21.24	9.64	18.93	8.97
64	0.1610	0.0259	1.41	20.00	8.77	17.98	9.92
65	0.1500	0.0225	1.23	18.63	7.87	16.89	11.01
66	0.1480	0.0219	1.19	18.38	7.48	16.79	11.11
67	0.1450	0.0210	1.15	18.01	7.04	16.58	11.32
68	0.1430	0.0204	1.11	17.76	6.65	16.47	11.43
69	0.1410	0.0199	1.08	17.51	6.28	16.35	11.55
70	0.1380	0.0190	1.04	17.14	5.86	16.11	11.79
71	0.1380	0.0190	1.04	17.14	5.58	16.21	11.69
72	0.1370	0.0188	1.02	17.02	5.26	16.19	11.71
73	0.1360	0.0185	1.01	16.89	4.94	16.16	11.74
74	0.1350	0.0182	0.99	16.77	4.62	16.12	11.78
75	0.1340	0.0180	0.98	16.65	4.31	16.08	11.82
76	0.1360	0.0185	1.01	16.89	4.09	16.39	11.51
77	0.1370	0.0188	1.02	17.02	3.83	16.58	11.32
78	0.1380	0.0190	1.04	17.14	3.56	16.77	11.13
79	0.1400	0.0196	1.07	17.39	3.32	17.07	10.83
80	0.1410	0.0199	1.08	17.51	3.04	17.25	10.65
81	0.1430	0.0204	1.11	17.76	2.78	17.54	10.36
82	0.1460	0.0213	1.16	18.14	2.52	17.96	9.94
83	0.1480	0.0219	1.19	18.38	2.24	18.25	9.65
84	0.1500	0.0225	1.23	18.63	1.95	18.53	9.37
85	0.1530	0.0234	1.28	19.01	1.66	18.93	8.97
86	0.1530	0.0234	1.28	19.01	1.33	18.96	8.94
87	0.1540	0.0237	1.29	19.13	1.00	19.10	8.80
88	0.1550	0.0240	1.31	19.25	0.67	19.24	8.66
89	0.1560	0.0243	1.33	19.38	0.34	19.38	8.52
90	0.1570	0.0246	1.34	19.50	0.00	19.50	8.40





**K290BO.X**

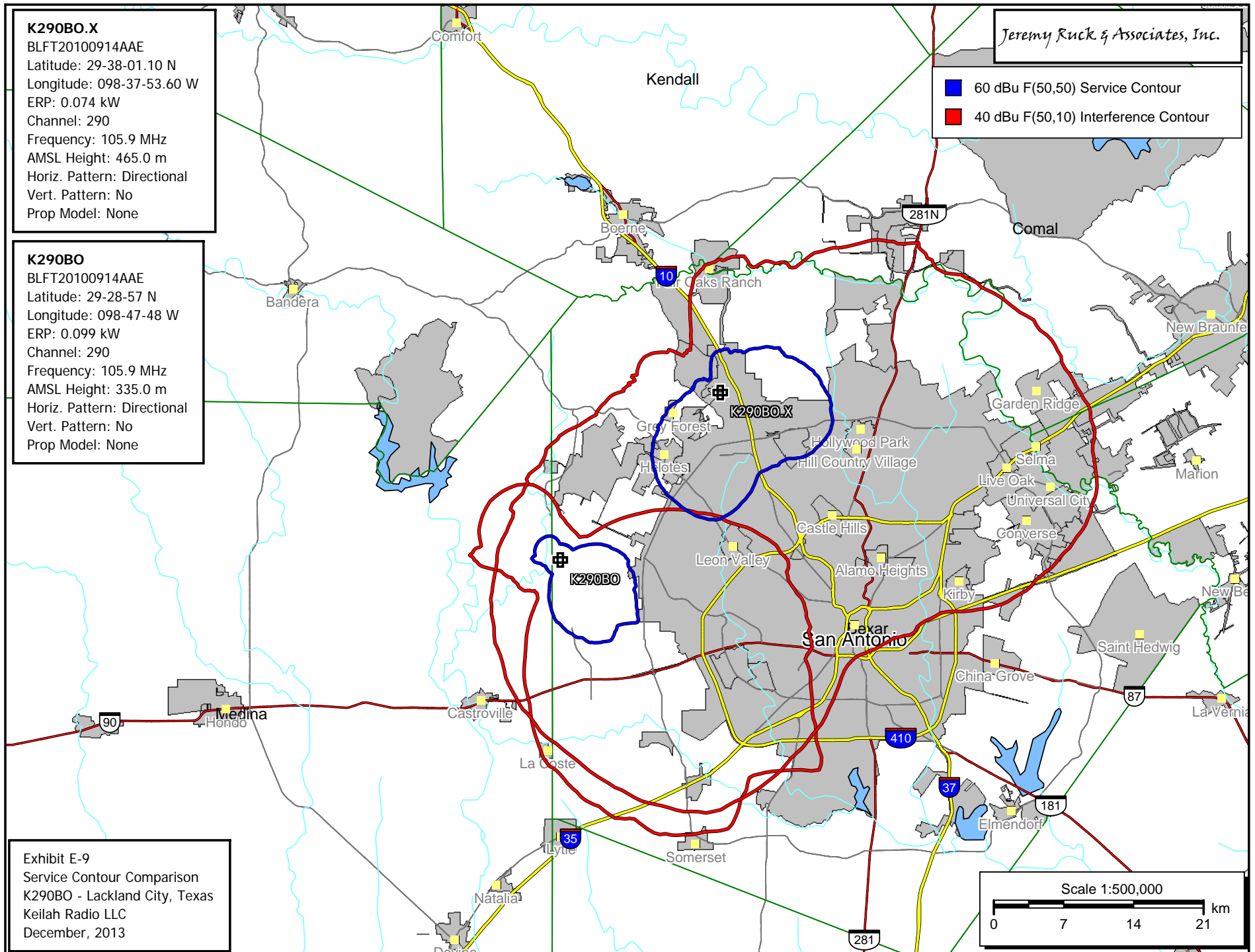
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Longitude: 098-37-53.60 W  
ERP: 0.074 kW  
Channel: 290  
Frequency: 105.9 MHz  
AMSL Height: 465.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**K290BO**

BLFT20100914AAE  
Latitude: 29-28-57 N  
Longitude: 098-47-48 W  
ERP: 0.099 kW  
Channel: 290  
Frequency: 105.9 MHz  
AMSL Height: 335.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

*Jeremy Ruck & Associates, Inc.*

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

**Exhibit E-9**

Service Contour Comparison  
K290BO - Lackland City, Texas  
Keilah Radio LLC  
December, 2013