

APPLICATION FOR CONSTRUCTION PERMIT

PROPOSED NEW FM TRANSLATOR STATION
MARSHALL, TEXAS
FACILITY ID: 156968
96.9 MHz / 0.205 kW ERP / ND

E-STRING WIRELESS, LTD.

AUGUST, 2013

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **E-String Wireless, Ltd** ("E-String"), applicant for a new FM translator station to serve Marshall, Texas, and are in support of their application for construction permit.¹

This application is being filed as the long-form application for the original short-form engineering proposal submitted by E-String during the Commission's 2003 Translator Auction 83 window. The original short-form engineering proposal was assigned FCC File No. BNPFT-20030317JLF. Upon review by the Staff, it was determined that the E-String short-form was mutually exclusive with another proposal. These two proposals formed MX Group 474.

During the settlement window, E-String submitted an amendment to their short-form proposal. This amendment changed the originally proposed site as well as the channel of operation. The technical parameters proposed at that time were a minor change to the original tech-box proposal. No changes to the technical parameters specified under the settlement amendment are proposed for this long-form application.

The proposed facility would operate on channel 245 with a maximum effective radiated power of 205 Watts at a center of radiation of 218.2 meters AMSL. The primary station for the proposed facility would be AM broadcast station KMHT at Marshall, Texas.² As a result, the facility would function as a fill-in translator for that station. Exhibit E-1 illustrates the predicted 60 dBu service contour of the proposed facility, and demonstrates that this contour would wholly reside

¹ The Facility ID for the proposed translator facility is 156968.

² The Facility ID for KMHT at Marshall, Texas is 72450. E-String has entered into a retransmit agreement with the licensee of KMHT.

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within the 2 mV/m daytime service contour and a twenty-five mile radius (40.2 kilometers) centered on the KMHT site.

The proposed facility would not impact LPFM licensing opportunities in any of the Appendix A markets. The two closest Appendix A markets to the proposed facility are the Tyler-Longview and Shreveport markets. Exhibit E-2 illustrates the proposed site location, and demonstrates that its location is outside the grid buffer of both markets.

The proposed facility would comply with the provisions of Section 74.1204 of the Commission's Rules. Exhibit E-3 is a tabular allocation study for the proposed facility. As this study demonstrates, the proposed facility would comply with the contour protection requirements of that section to all facilities with the exception of KVKI-FM at Shreveport, Louisiana.³ This tabular allocation study is graphically depicted in the Exhibit E-4 contour map.

Although normally prohibited contour overlap between the proposed facility and KVKI-FM would be present, no populated areas would be affected by the predicted potential interference region. Exhibit E-5 illustrates the proposed site location along with the predicted 69.6 dBu service contour from KVKI-FM. As this map demonstrates, the 69.6 dBu service contour intersects the site, thus interference from the translator, expected to be in the immediate vicinity of its site, would potentially occur in regions where its field strength is at least 109.6 dBu.⁴

³ The Facility ID for KVKI-FM at Shreveport, Louisiana is 19560.

⁴ Specified value for interference is based on 40 dB ratio for second adjacent facilities.

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The power density for the proposed facility at a field strength of 109.6 dBu is given by the following equation:

$$S = \frac{E^2}{Z_0} = \frac{(0.3020)^2}{377} = 0.0002419$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 108.1 dBu is 0.3020 Volts per meter, and Z_0 is the characteristic impedance of free space of 377 ohms.

The power density is also given by:

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

Where S is the same units, P is the power in Watts (205 Watts in this case), and R is the distance from the antenna. Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

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

The results of these calculations for depression angles of 0 degrees to 90 degrees are tabulated in Exhibit E-6. The relative field values utilized for the antenna were obtained from the Shively web page for the model 6812B-2 antenna that is proposed for use at the facility. As the tabulation and the associated graphs demonstrate, the predicted interference region lies at an elevation of no less than 38 meters above ground level at the site. The following street level image illustrates the tower, and depicts no structures of such a height in the vicinity. As a result, the proposed facility would not cause interference to any populated areas.

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The proposed facility would not result in a significant environmental impact, and is exempt from environmental processing. The addition of the translator antenna to the structure would not increase the already existing environmental impact from the existing tower. In addition, the translator would not constitute an RF exposure hazard to persons on the ground in the vicinity of the structure.

The Commission's *FM Model* software package predicts a maximum power density at ground level of $0.68 \mu\text{W}/\text{cm}^2$ at 76 meters from the tower base. This value categorically excludes the proposed facility. E-String certifies, however, that it will coordinate with all other users of the site to ensure that workers and other personnel having access to the site are not exposed to levels

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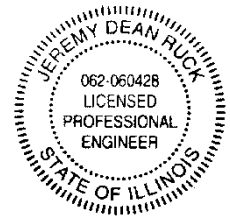
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of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

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



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

Jeremy D. Ruck, PE
August 28, 2013

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1562700.A

BNPFT20030317JLF

Latitude: 32-33-49 N

Longitude: 094-21-07 W

ERP: 0.205 kW

Channel: 245

Frequency: 96.9 MHz

AMSL Height: 218.2 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

Proposed 60 dBu
Service Contour

Jeremy Ruck & Associates, Inc.

KMHT 40.2 km
Site Radius

KMHT 2 mV/m
Daytime Contour

Exhibit E-1

Service Contour Comparison

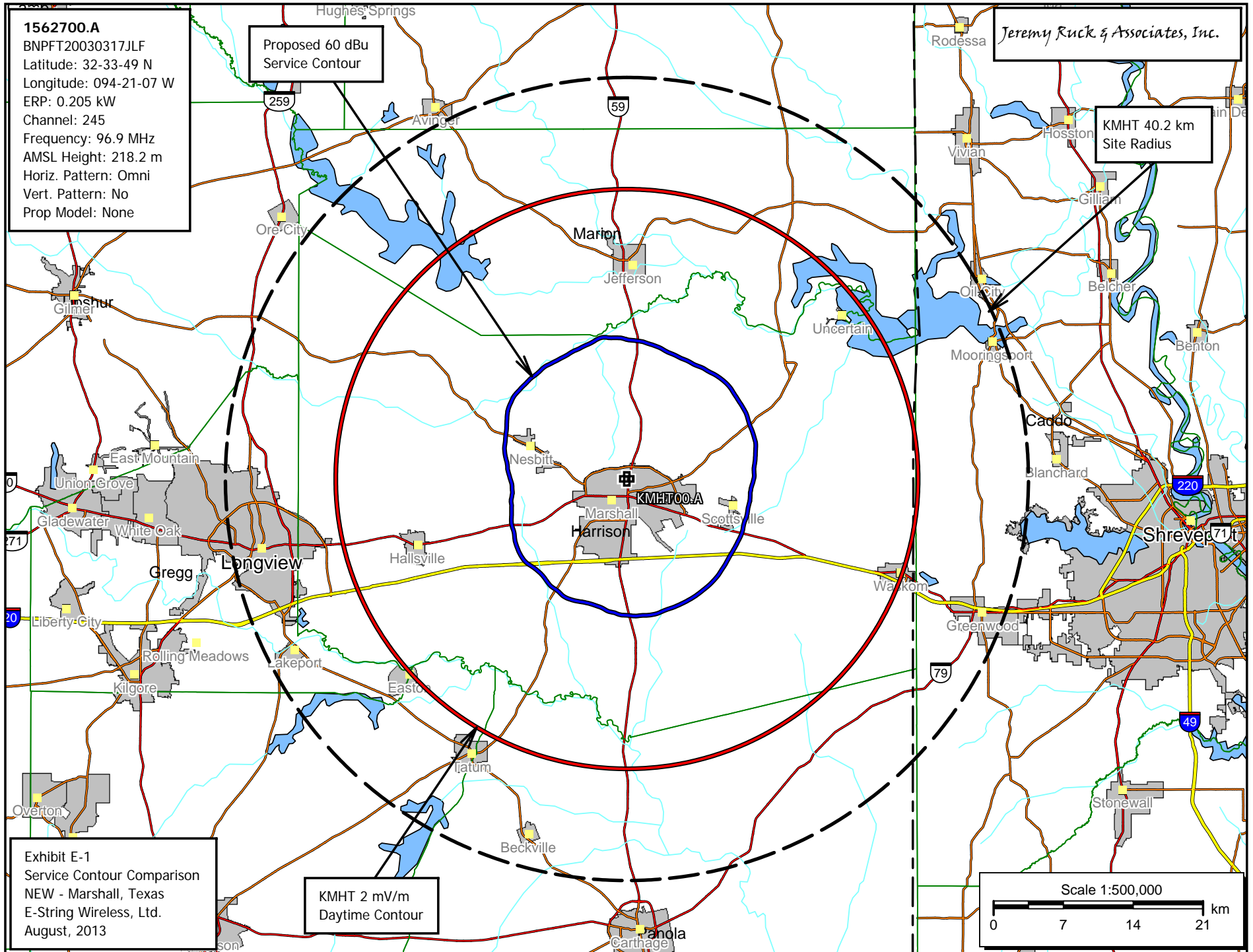
NEW - Marshall, Texas

E-String Wireless, Ltd.

August, 2013

Scale 1:500,000

0 7 14 21 km



1562700.A

BNPFT20030317JLF

Latitude: 32-33-49 N

Longitude: 094-21-07 W

ERP: 0.205 kW

Channel: 245

Frequency: 96.9 MHz

AMSL Height: 218.2 m

Elevation: 101.333 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

Tyler-Longview Market
Grid and Buffer

Jeremy Ruck & Associates, Inc.

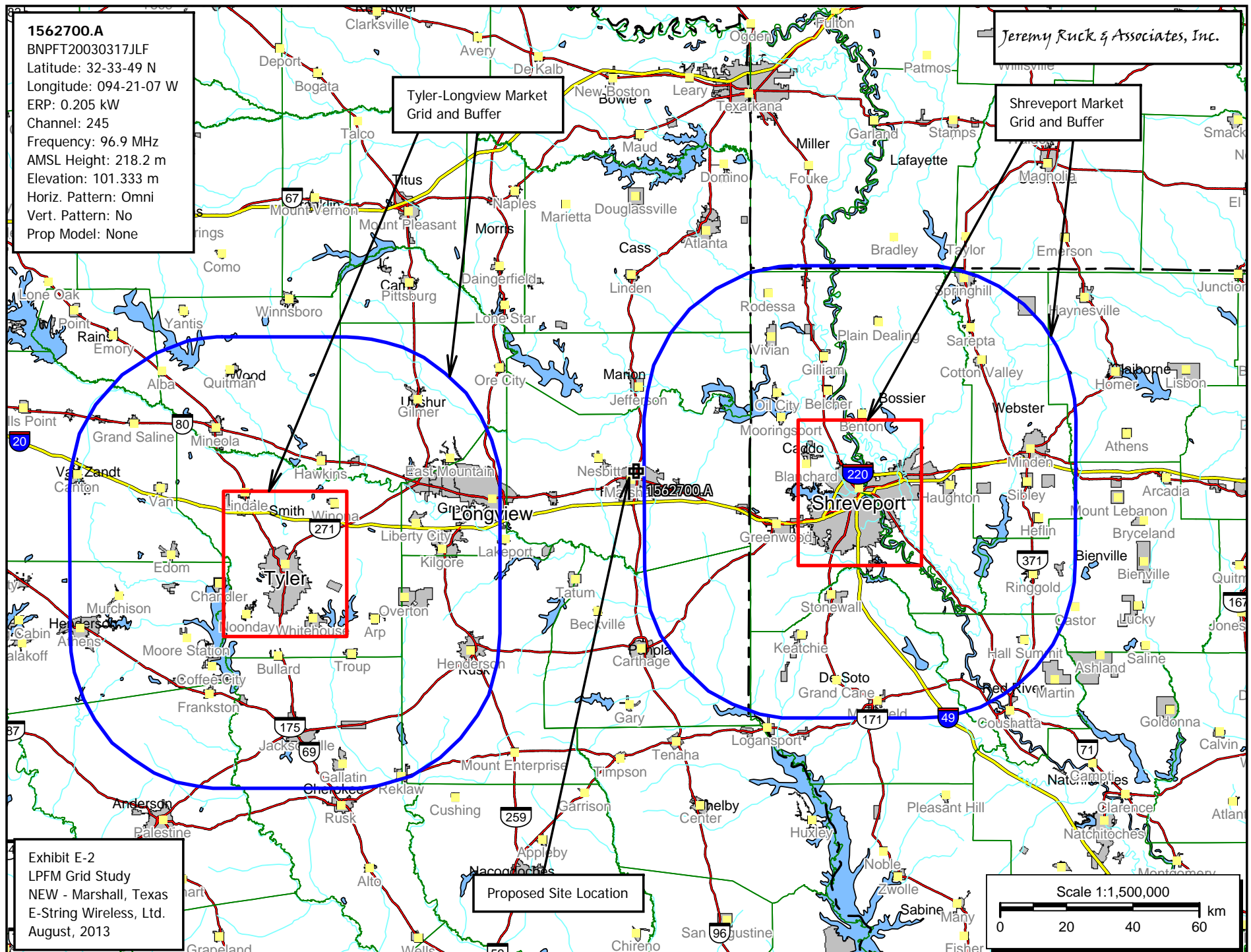
Shreveport Market
Grid and Buffer

Exhibit E-2
LPFM Grid Study
NEW - Marshall, Texas
E-String Wireless, Ltd.
August, 2013

Proposed Site Location

Scale 1:1,500,000

0 20 40 60 km



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





Exhibit E-3 - Tabular Allocation Study

REFERENCE CH# 245D - 96.9 MHz, Pwr= 0.205 kW, HAAT= 117.8 M, COR= 218.2 M DISPLAY DATES
32 33 49.0 N. NEW - Marshall, Texas DATA 08-28-13
94 21 07.0 W. Average Protected F(50-50)= 13.26 km SEARCH 08-28-13
Omni-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*
245D Marshall	1562700	APP _C_ TX	0.0 0.0	0.00 BNPFT20030317JLF	32 33 49.0 94 21 07.0	0.205	47.1 218	14.0 E-string Wireless, Ltd	-61.1*	-61.2*
245C3 Pittsburg	KSCN	LIC NC_ TX	306.6 126.2	83.42 BLH20010730ABF	33 00 31.0 95 04 14.0	14.000 113	103.1 230	36.3 East Texas Broadcasting, I	-33.7*	0.0
243C1 Shreveport	KVKI -FM	LIC _CY LA	85.7 265.9	46.13 BLH19850305KS	32 35 38.0 93 51 39.0	100.000 243	8.9 305	66.8 Townsquare Media Shrevepor	24.1	-21.7*
245D Shreveport	K245BA	LIC _C_ LA	95.9 276.2	57.39 BLFT20080306AAC	32 30 32.0 93 44 35.0	0.205 107	43.9 160	12.8 Houston Christian Broadcas	0.7	1.6
247C2 Waskom	KQHN	LIC _CX TX	97.9 278.2	55.54 BLH20060109AAQ	32 29 36.0 93 45 55.0	42.000 163	6.0 216	52.6 Cumulus Licensing LIc	36.9	2.0
247C2 Waskom	AL7143	RSV-A ____ TX	97.9 278.2	55.54 RM11232	32 29 36.0 93 45 55.0	50.000 150	6.0 203	52.5 36.9	36.9	2.0
246D Longview	1564574	APP _C_ TX	258.6 78.4	37.31 BNPFT20030317CIN	32 29 48.7 94 44 31.6	0.250	13.8 167	9.6 Houston Christian Broadcas	11.7	9.5
244C2 Frankston	KOYE	LIC NC_ TX	239.9 59.4	115.31 BLH20010510AAK	32 02 22.0 95 24 39.0	50.000 150	75.7 276	50.1 Access.1 Texas License Com	26.6	46.1
247D Henderson	640799	APP _C_ TX	225.5 45.3	59.97 BNPFT20030317KTH	32 11 06.0 94 48 25.0	0.250 88	1.1 216	12.3 East Texas Community Repea	45.9	46.1

Terrain database is FCC NGDC 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= 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:

BNPFT20030317JLF
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Longitude: 094-21-07 W
ERP: 0.205 kW
Channel: 245
Frequency: 96.9 MHz
AMSL Height: 218.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

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

Scale 1:1,250,000



0 10 20 30 km

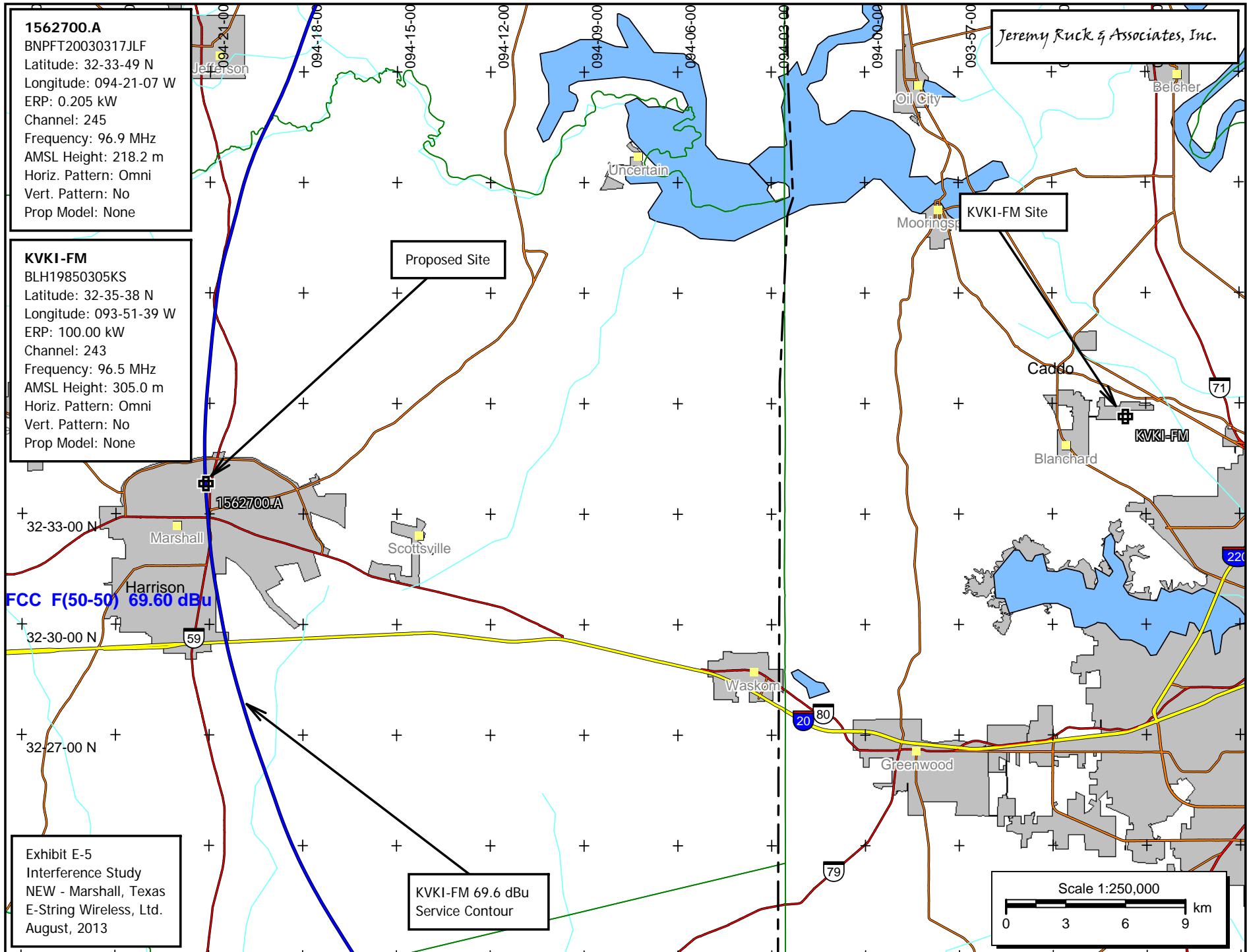
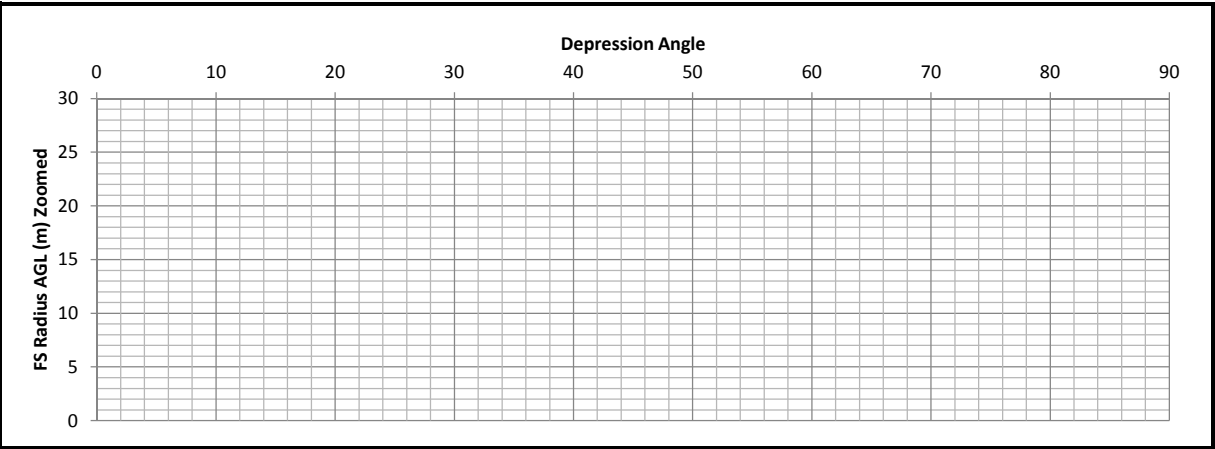
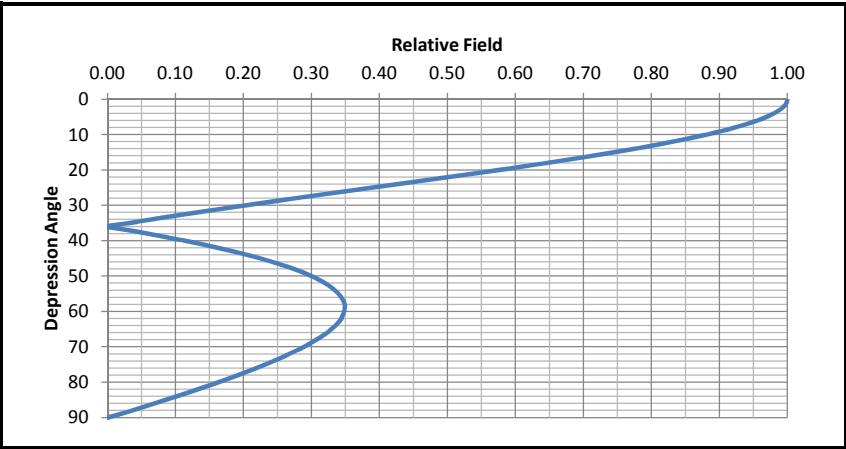


Exhibit E-6

Translator Proximity Interference Analysis

NEW - Marshall, Texas

Antenna No:	2	<div><div></div><div></div><div></div></div>	Center of Radiation:	117.3 m AGL
Manufacturer:	Shively	<div><div></div><div></div><div></div></div>	Effective Radiated Power:	205 Watts
Model:	6812B-2		FS Contour:	109.6 dBu
Number of Bays:	2		E Field Strength:	0.30200 V/m
Bay Spacing:	Lambda		Z0 (Ohms):	377 Ohms
			Power Density:	0.000241913 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	259.68	259.68	0.00	117.30
1	0.9990	0.9980	204.59	259.42	259.38	4.53	112.77
2	0.9950	0.9900	202.96	258.38	258.23	9.02	108.28
3	0.9890	0.9781	200.51	256.83	256.47	13.44	103.86
4	0.9800	0.9604	196.88	254.49	253.87	17.75	99.55
5	0.9690	0.9390	192.49	251.63	250.67	21.93	95.37
6	0.9560	0.9139	187.36	248.26	246.90	25.95	91.35
7	0.9400	0.8836	181.14	244.10	242.28	29.75	87.55
8	0.9230	0.8519	174.65	239.69	237.35	33.36	83.94
9	0.9030	0.8154	167.16	234.49	231.61	36.68	80.62
10	0.8810	0.7762	159.11	228.78	225.30	39.73	77.57
11	0.8570	0.7344	150.56	222.55	218.46	42.46	74.84
12	0.8320	0.6922	141.91	216.06	211.33	44.92	72.38
13	0.8040	0.6464	132.52	208.78	203.43	46.97	70.33
14	0.7750	0.6006	123.13	201.25	195.28	48.69	68.61
15	0.7450	0.5550	113.78	193.46	186.87	50.07	67.23
16	0.7130	0.5084	104.22	185.15	177.98	51.04	66.26
17	0.6800	0.4624	94.79	176.58	168.87	51.63	65.67
18	0.6460	0.4173	85.55	167.75	159.54	51.84	65.46
19	0.6110	0.3733	76.53	158.67	150.02	51.66	65.64
20	0.5750	0.3306	67.78	149.32	140.31	51.07	66.23
21	0.5380	0.2894	59.34	139.71	130.43	50.07	67.23
22	0.5010	0.2510	51.46	130.10	120.63	48.74	68.56
23	0.4640	0.2153	44.14	120.49	110.91	47.08	70.22
24	0.4260	0.1815	37.20	110.62	101.06	45.00	72.30
25	0.3880	0.1505	30.86	100.76	91.32	42.58	74.72
26	0.3510	0.1232	25.26	91.15	81.92	39.96	77.34
27	0.3130	0.0980	20.08	81.28	72.42	36.90	80.40
28	0.2760	0.0762	15.62	71.67	63.28	33.65	83.65
29	0.2390	0.0571	11.71	62.06	54.28	30.09	87.21
30	0.2020	0.0408	8.36	52.46	45.43	26.23	91.07
31	0.1660	0.0276	5.65	43.11	36.95	22.20	95.10
32	0.1310	0.0172	3.52	34.02	28.85	18.03	99.27
33	0.0970	0.0094	1.93	25.19	21.13	13.72	103.58
34	0.0630	0.0040	0.81	16.36	13.56	9.15	108.15
35	0.0310	0.0010	0.20	8.05	6.59	4.62	112.68
36	0.0000	0.0000	0.00	0.00	0.00	0.00	117.30
37	0.0310	0.0010	0.20	8.05	6.43	4.84	112.46
38	0.0600	0.0036	0.74	15.58	12.28	9.59	107.71
39	0.0870	0.0076	1.55	22.59	17.56	14.22	103.08
40	0.1140	0.0130	2.66	29.60	22.68	19.03	98.27
41	0.1390	0.0193	3.96	36.10	27.24	23.68	93.62
42	0.1630	0.0266	5.45	42.33	31.46	28.32	88.98
43	0.1850	0.0342	7.02	48.04	35.14	32.76	84.54
44	0.2060	0.0424	8.70	53.49	38.48	37.16	80.14
45	0.2250	0.0506	10.38	58.43	41.32	41.32	75.98

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.2250	0.0506	10.38	58.43	41.32	41.32	75.98
46	0.2430	0.0590	12.11	63.10	43.83	45.39	71.91
47	0.2600	0.0676	13.86	67.52	46.05	49.38	67.92
48	0.2750	0.0756	15.50	71.41	47.78	53.07	64.23
49	0.2880	0.0829	17.00	74.79	49.07	56.44	60.86
50	0.3000	0.0900	18.45	77.90	50.08	59.68	57.62
51	0.3110	0.0967	19.83	80.76	50.82	62.76	54.54
52	0.3200	0.1024	20.99	83.10	51.16	65.48	51.82
53	0.3280	0.1076	22.05	85.18	51.26	68.02	49.28
54	0.3350	0.1122	23.01	86.99	51.13	70.38	46.92
55	0.3400	0.1156	23.70	88.29	50.64	72.32	44.98
56	0.3440	0.1183	24.26	89.33	49.95	74.06	43.24
57	0.3470	0.1204	24.68	90.11	49.08	75.57	41.73
58	0.3490	0.1218	24.97	90.63	48.03	76.86	40.44
59	0.3490	0.1218	24.97	90.63	46.68	77.68	39.62
60	0.3480	0.1211	24.83	90.37	45.18	78.26	39.04
61	0.3460	0.1197	24.54	89.85	43.56	78.58	38.72
62	0.3440	0.1183	24.26	89.33	41.94	78.87	38.43
63	0.3400	0.1156	23.70	88.29	40.08	78.67	38.63
64	0.3350	0.1122	23.01	86.99	38.14	78.19	39.11
65	0.3290	0.1082	22.19	85.44	36.11	77.43	39.87
66	0.3230	0.1043	21.39	83.88	34.12	76.63	40.67
67	0.3150	0.0992	20.34	81.80	31.96	75.30	42.00
68	0.3070	0.0942	19.32	79.72	29.86	73.92	43.38
69	0.2980	0.0888	18.20	77.39	27.73	72.25	45.05
70	0.2890	0.0835	17.12	75.05	25.67	70.52	46.78
71	0.2780	0.0773	15.84	72.19	23.50	68.26	49.04
72	0.2670	0.0713	14.61	69.34	21.43	65.94	51.36
73	0.2560	0.0655	13.43	66.48	19.44	63.57	53.73
74	0.2440	0.0595	12.20	63.36	17.47	60.91	56.39
75	0.2320	0.0538	11.03	60.25	15.59	58.19	59.11
76	0.2190	0.0480	9.83	56.87	13.76	55.18	62.12
77	0.2050	0.0420	8.62	53.23	11.98	51.87	65.43
78	0.1910	0.0365	7.48	49.60	10.31	48.52	68.78
79	0.1770	0.0313	6.42	45.96	8.77	45.12	72.18
80	0.1630	0.0266	5.45	42.33	7.35	41.69	75.61
81	0.1480	0.0219	4.49	38.43	6.01	37.96	79.34
82	0.1330	0.0177	3.63	34.54	4.81	34.20	83.10
83	0.1170	0.0137	2.81	30.38	3.70	30.16	87.14
84	0.1010	0.0102	2.09	26.23	2.74	26.08	91.22
85	0.0850	0.0072	1.48	22.07	1.92	21.99	95.31
86	0.0690	0.0048	0.98	17.92	1.25	17.87	99.43
87	0.0520	0.0027	0.55	13.50	0.71	13.48	103.82
88	0.0360	0.0013	0.27	9.35	0.33	9.34	107.96
89	0.0180	0.0003	0.07	4.67	0.08	4.67	112.63
90	0.0000	0.0000	0.00	0.00	0.00	0.00	117.30

