AMENDMENT TO APPLICATION FOR CONSTRUCTION PERMIT

PROPOSED NEW FM TRANSLATOR STATION
CARTHAGE, TEXAS
FACILITY ID: 156995
103.7 MHZ / 0.250 KW ERP / ND

E-STRING WIRELESS, LTD.

JULY, 2013

JEREMY RUCK & ASSOCIATES, INC.
P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520
Tel: 309.647.1200
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jeremyruck.com

AMENDMENT TO 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 Carthage, Texas, and are in support of their amendment to application for construction permit.[1]

This amendment is being submitted as part of the Commission's Translator Auction 83 settlement process. The original application submitted by E-String was assigned FCC File No. BNPFT-20030317JJI. Upon initial review by the Staff, it was determined that the application was mutually exclusive with an application filed by Millennium Broadcasting Corp. ("Millennium") at Longview, Texas.[2] E-String was not mutually exclusive with its application at Longview, Texas, however, Millennium was, and as a result created the three member MX Group 468.[3]

This application seeks to extricate the Carthage application from the MX Group and create a singleton. The remaining mutual exclusivity between E-String and Millennium at Longview will be addressed in a separate application. In order to eliminate the mutual exclusivity with Millennium, E-String proposes a change in the transmitter site location as well as the channel of operation.

The proposed facility would operate on channel 279, which is a change of one channel from the originally specified channel of operation of 278. The proposed facility would operate with an effective radiated power of 250 Watts at a center of radiation of 135.3 meters AMSL.[4] A non-directional antenna would be utilized by the facility. Exhibit E-1 illustrates the original 60 dBu

[1] The Facility ID for the proposed translator facility is 156995.
[2] Facility ID 156730. See FCC File No. BNPFT-20030317IJU.
[3] Facility ID for E-String application at Longview is 156836. See BNPFT-20030317JNV.
[4] The average terrain for the proposed facility is determined by the 120 degree true radial on which the average elevation is 81.6 meters AMSL. Terrain was sampled from the FCC 30-second terrain database.

service contour of the proposed translator along with the originally proposed 60 dBu service contour. As this map demonstrates, there would be overlap between the two facilities. The changes proposed, therefore, constitute a minor change to the original proposal.

The primary station for the proposed translator would be changed from the originally specified KCUL-FM at Marshall, Texas to KGAS at Carthage, Texas.[5] The proposed translator would therefore function as a fill-in translator for that AM station. Exhibit E-2 demonstrates that the predicted 60 dBu service contour of the translator would be wholly contained within both the daytime 2 mV/m groundwave contour of KGAS and within a 25 mile (40.2 kilometer) radius of the KGAS transmitter site. E-String has obtained a written retransmit agreement with Jerry T. Hanszen, the licensee of KGAS.

The proposed facility would not impact LPFM licensing opportunities within any of the Appendix A markets. Carthage, Texas is located between the Tyler-Longview and Shreveport markets. Exhibit E-3 illustrates the site location relative to these two markets including the grid and buffer for both. As this map demonstrates, the proposed facility would be located outside the buffer of both markets.

The proposed facility would comply with the provisions of Section 74.1204 of the Commission's Rules. Exhibit E-4 is a tabular allocation study for the proposed facility. As this study demonstrates, the proposed facility would comply with all of the contour protection

[5] The Facility ID for KGAS at Carthage, Texas is 31065.

requirements to adjacent facilities with the exception of KGAS-FM at Carthage, Texas.[6] This tabular study is graphically depicted in Exhibit E-5.

Although normally prohibited contour overlap between the proposed facility and KGAS-FM would occur, no populated areas would be affected by the predicted potential interference regions. Exhibit E-6 illustrates the proposed site location along with the predicted 78.6 dBu service contour from KGAS-FM. As this map demonstrates, the 78.6 dBu contour from KGAS-FM intersects the proposed site. Interference in the immediate vicinity of the site would therefore potentially occur in regions where the field strength from the translator is equal to or exceeds 118.6 dBu.[7]

The power density for the proposed facility at a field strength of 118.6 dBu is given by the following equation:

$$\boldsymbol{S = \frac{E^2}{Z_0} = \frac{(0.8511)^2}{377} = 0.001922}$$

In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 118.6 dBu is 0.8511 Volts per meter, and Z_0 is the characteristic impedance of free space of 377 ohms.

The power density is also given by:

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

[6] The Facility ID for KGAS-FM at Carthage, Texas is 25990.
[7] The specified value for the interference level is based on 40 dB ratio for third adjacent facilities.

Where S is the same units, P is the power in Watts (250 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-7. In addition to the tabular data in Exhibit E-7, several graphs are included, which graphically illustrate the interference situation for a given azimuth slice. As indicated on the form pages, a Shively 6832-2 antenna is proposed for use by the facility. The relative field value listed at the various depression angles is based on the published data for this antenna, and was obtained from the Shively web page.

As the tabulation and graphs in Exhibit E-7 demonstrate, the closest approach of the interference region to ground level occurs at a depression angle of 23 degrees, where the interference begins at 24.04 meters above ground level at a distance of 61 meters from the base of the tower. The satellite image on the next page illustrates the tower location and a 61 meter radius centered on the tower. As this photograph demonstrates, there are no structures within this region.[8] As a result, the proposed facility is not predicted to cause interference to any populated areas.

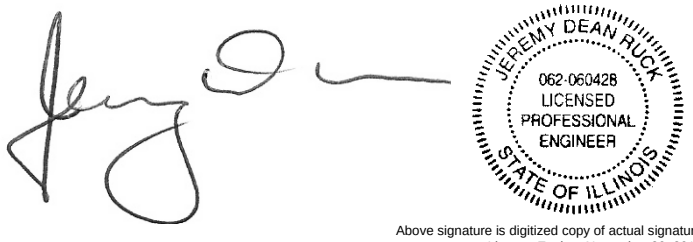
[8] One structure lies within this 61 meter radius, however, the structure is the single story transmitter building for KGAS, which is not only unpopulated and exists below the interference zone, but is also associated with KGAS-FM.

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 form 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 1.36 $\mu W/cm^2$ at a distance of 28 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 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
July 12, 2013

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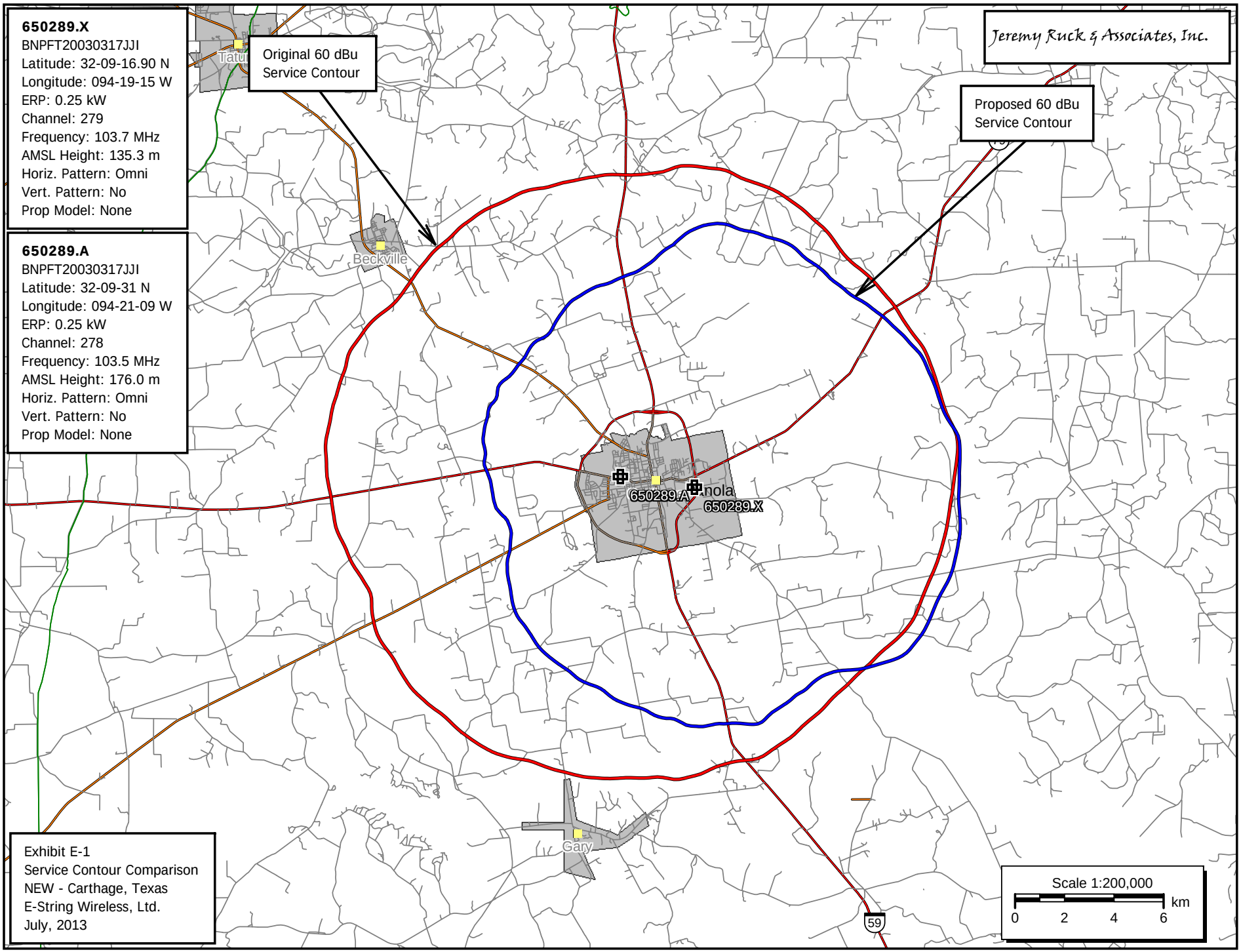
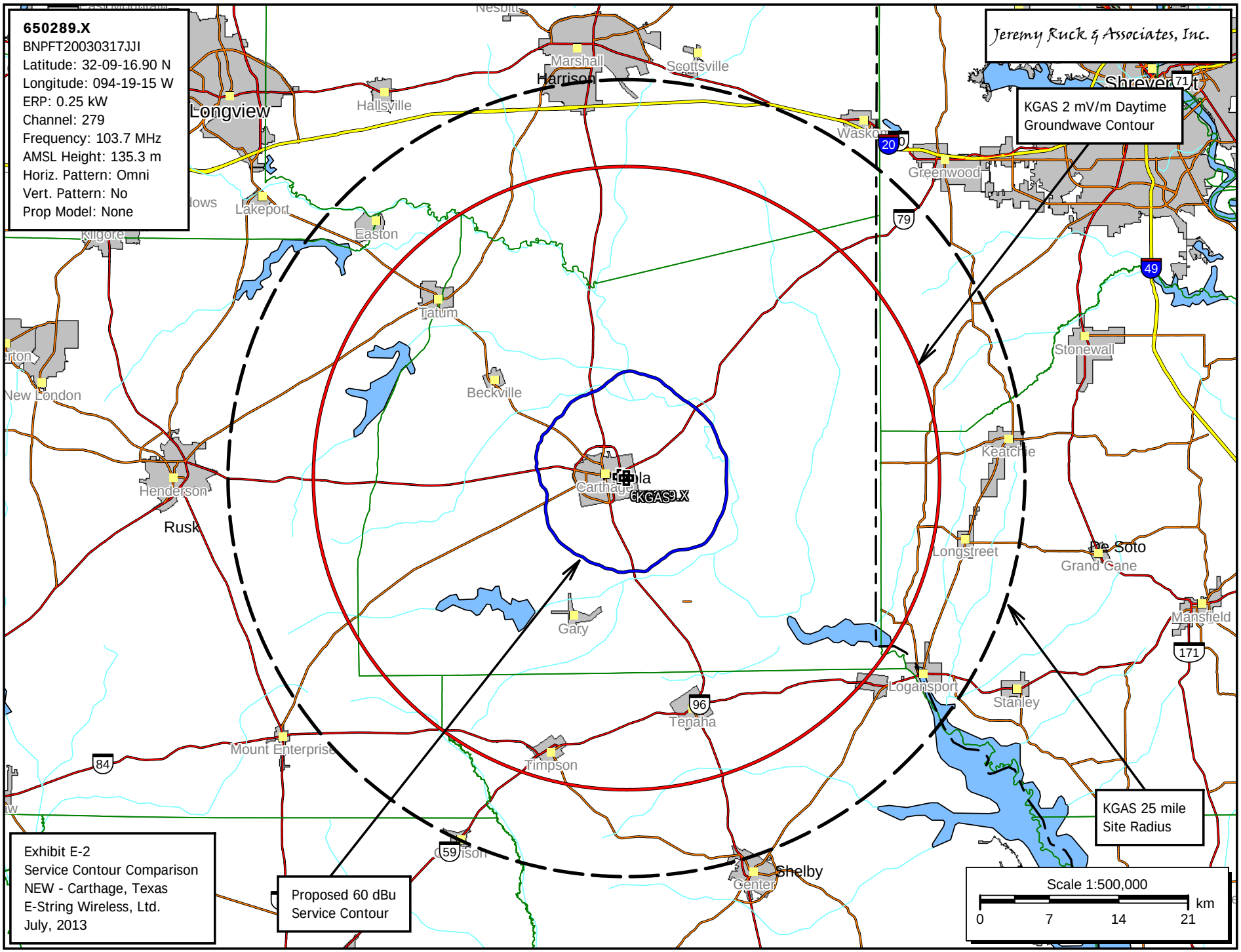

650289.X
BNPFT20030317JJI
Latitude: 32-09-16.90 N
Longitude: 094-19-15 W
ERP: 0.25 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 135.3 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
650289.A
BNPFT20030317JJI
Latitude: 32-09-31 N
Longitude: 094-21-09 W
ERP: 0.25 kW
Channel: 278
Frequency: 103.5 MHz
AMSL Height: 176.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Original 60 dBu Service Contour
Proposed 60 dBu Service Contour
Jeremy Ruck & Associates, Inc.
Tatum
Beckville
650289.A
650289.X
Gary
59
Scale 1:200,000
0 2 4 6 km
Exhibit E-1
Service Contour Comparison
NEW - Carthage, Texas
E-String Wireless, Ltd.
July, 2013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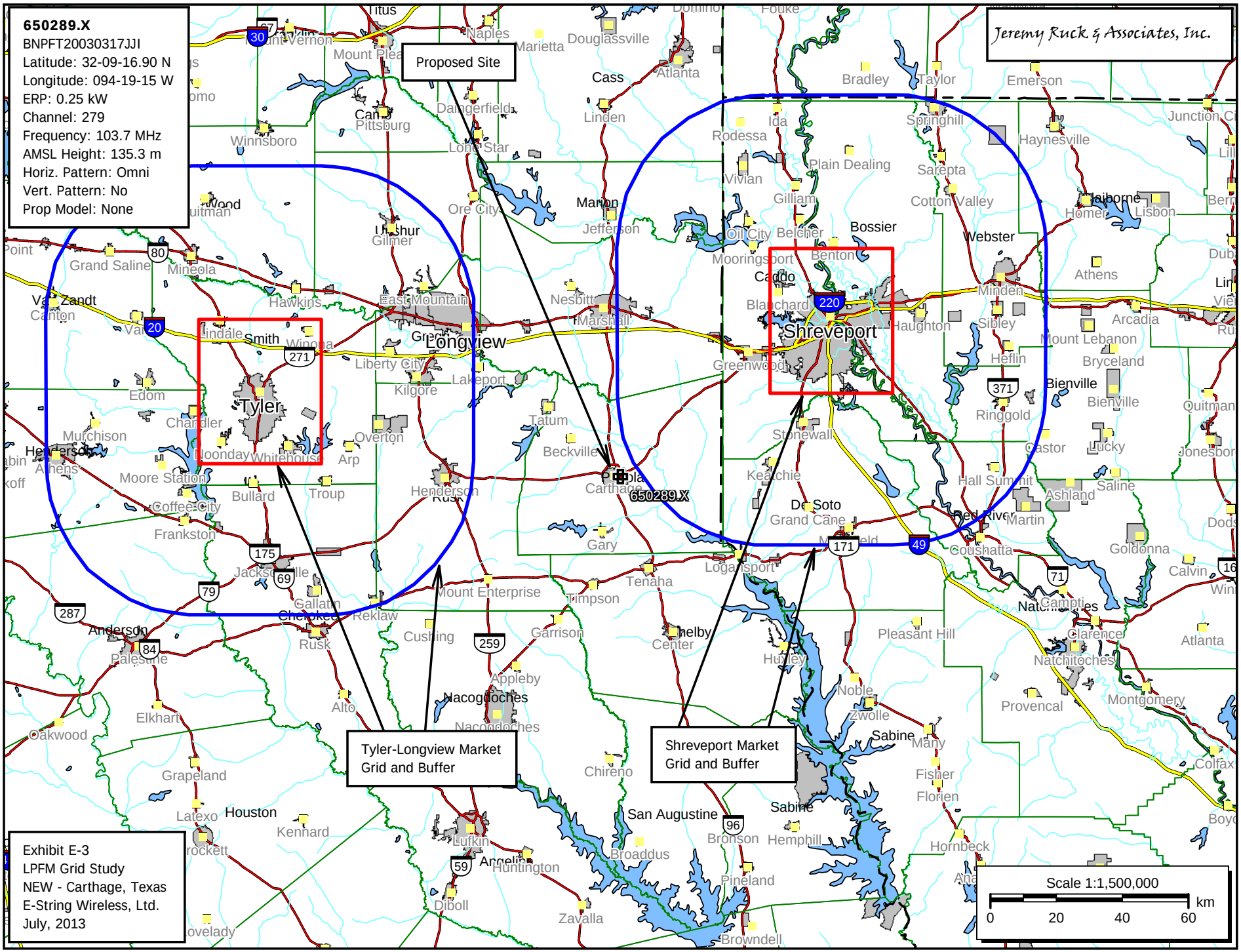
BNPFT20030317JJI
Latitude: 32-09-16.90 N
Longitude: 094-19-15 W
ERP: 0.25 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 135.3 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Jeremy Ruck & Associates, Inc.
KGAS 2 mV/m Daytime Groundwave Contour
KGAS 25 mile Site Radius
Proposed 60 dBu Service Contour
Exhibit E-2
Service Contour Comparison
NEW - Carthage, Texas
E-String Wireless, Ltd.
July, 2013
Scale 1:500,000
0 7 14 21 km
Longview
Marshall
Harrison
Hallsville
Scottsville
Waskom
Greenwood
Shreveport
Lakeport
Easton
Kilgore
Tatum
Beckville
New London
Henderson
Rusk
Carthage
KGAS9.X
Stonewall
Keatchie
Longstreet
De Soto
Grand Cane
Mansfield
Gary
Logansport
Stanley
Tenaha
Mount Enterprise
Timpson
Center
Shelby
20
79
49
71
96
84
59
171


650289.X
BNPFT20030317JJI
Latitude: 32-09-16.90 N
Longitude: 094-19-15 W
ERP: 0.25 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 135.3 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Jeremy Ruck & Associates, Inc.
Proposed Site
Tyler-Longview Market Grid and Buffer
Shreveport Market Grid and Buffer
Exhibit E-3
LPFM Grid Study
NEW - Carthage, Texas
E-String Wireless, Ltd.
July, 2013
Scale 1:1,500,000
0 20 40 60 km
Tyler
Longview
Shreveport
Carthage
650289.X

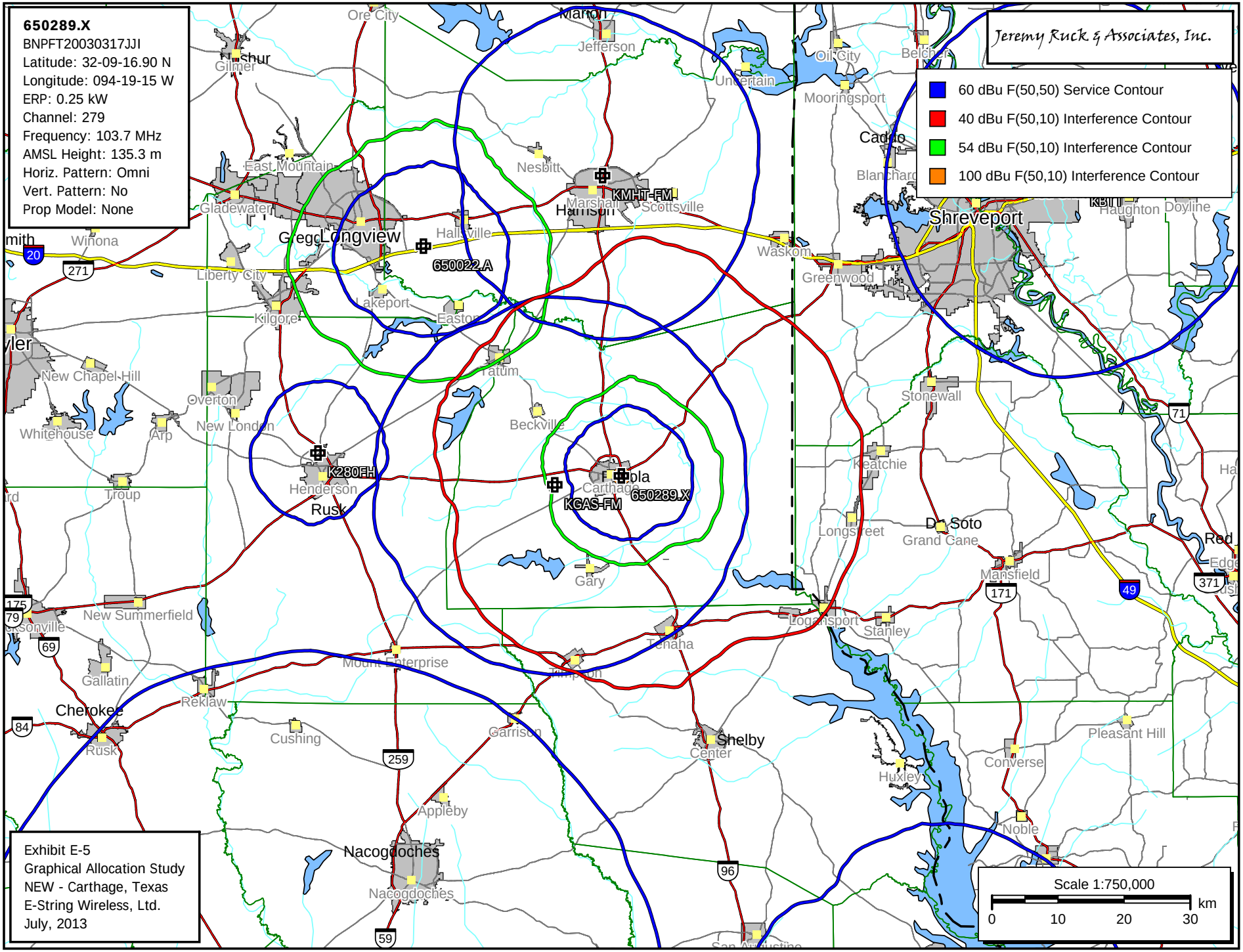
Jeremy Ruck & Associates, Inc.
Consulting Engineers - Canton, Illinois

Exhibit E-4 - Tabular Allocation Study
NEW - Carthage, Texas

REFERENCE CH# 279D - 103.7 MHz, Pwr= 0.25 kW, HAAT= 54.5 M, COR= 135.3 M DISPLAY DATES
32 09 16.9 N. Average Protected F(50-50)= 9.71 km DATA 07-12-13
94 19 15.0 W. Omni-directional SEARCH 07-12-13

CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
279A	AL0976	VAC	___	239.2	39.82	31 58 15.0	6.000	89.3	30.4	-58.2*	-19.6
Mount Enterprise		TX		59.0	RM11494	94 41 01.0	100	231	Jer Licenses, Llc		
278D	650289	APP	_C_	278.3	3.01	32 09 31.0	0.250	20.0	13.3	-25.5*	-22.4*
Carthage		TX		98.3	BNPFT20030317JJI	94 21 09.0	93	176	E-string Wireless, Ltd		
282A	KGAS-FM	LIC	_CN	262.3	10.13	32 08 33.0	6.000	2.8	29.0	-0.7	-20.0*
Carthage		TX		82.3	BLH19920918KF	94 25 39.0	100	191	Hanszen Broadcasting		
279A	KBTT	LIC	_CN	57.2	82.30	32 33 11.0	6.000	88.3	29.5	-16.5*	17.2
Haughton		LA		237.6	BLH19930308KE	93 34 56.0	100	157	Access.1 Louisiana Holding		
280A	KMHT-FM	LIC	_CX	356.4	45.58	32 33 50.0	1.850	37.4	24.8	-2.3	5.9
Marshall		TX		176.4	BMLH20100514AJJ	94 21 04.0	129	227	Hanszen Broadcast Group, I		
278D	650022	APP	_C_	319.4	45.84	32 28 02.4	0.250	21.0	13.9	15.9	19.4
Longview		TX		139.2	BNPFT20030317IJU	94 38 20.2	101	197	Millennium Broadcasting Co		
280D	K280FH	LIC	_C_	274.3	45.87	32 11 06.0	0.099	14.8	10.6	22.5	23.5
Henderson		TX		94.1	BLFT20100804AAS	94 48 25.0		228	Jerry T. Hanszen		
279D	650130	APP	DH_	314.0	54.88	32 29 48.0	0.250	6.9	2.0	39.5	23.9
Longview		TX		133.7	BNPFT20030317JNV	94 44 32.0	75	176	E-string Wireless, Ltd		
277C2	AL7463	RSV-A	___	210.5	92.95	31 25 59.0	50.000	6.3	54.1	77.6	37.6
Nacogdoches		TX		30.2	RM10035	94 49 03.0	150	227			
277C2	KJCS	LIC	_CX	210.5	92.95	31 25 59.0	22.500	6.0	53.5	77.9	38.2
Nacogdoches		TX		30.2	BLH20020228AAD	94 49 03.0	224	304	Radio Licensing, Inc.		
226C1	KTYL-FM«	LIC	NC_	281.3	60.50	32 15 35.0	82.000	75.3	50.0	21.5R	39.0M
Tyler		TX		101.0	BLH19980612KC	94 57 02.0	286	420	Townsquare Media Tyler Lic		
279C	KHJK	LIC	_C_	184.2	247.35	29 56 09.0	100.000	197.5	91.6	40.3	123.8
La Porte		TX		4.1	BMLED20120813ABM	94 30 39.0	590	607	Educational Media Foundati		
279C	KHJK	LIC	_C_	184.2	247.35	29 56 09.0	100.000	197.5	91.6	40.3	123.8
La Porte		TX		4.1	BLED20130415ACC	94 30 39.0	590	607	Educational Media Foundati		
280A	KTHP	LIC	_CX	150.8	93.07	31 25 24.0	4.500	38.9	25.0	44.2	54.1
Hemphill		TX		331.0	BLH20020301AEK	93 50 30.0	115	195	Baldridge-dumas Communicat		

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.
« = Station meets FCC minimum distance spacing for its class.
Reference station has protected zone issue:


650289.X
BNPFT20030317JJI
Latitude: 32-09-16.90 N
Longitude: 094-19-15 W
ERP: 0.25 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 135.3 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Jeremy Ruck & 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
650022.A
KMHT-FM
K280FH
KGAS-FM
650289.X
Longview
Shreveport
Henderson
Rusk
Carthage
Center
Nacogdoches
Exhibit E-5
Graphical Allocation Study
NEW - Carthage, Texas
E-String Wireless, Ltd.
July, 2013
Scale 1:750,000
0 10 20 30 km

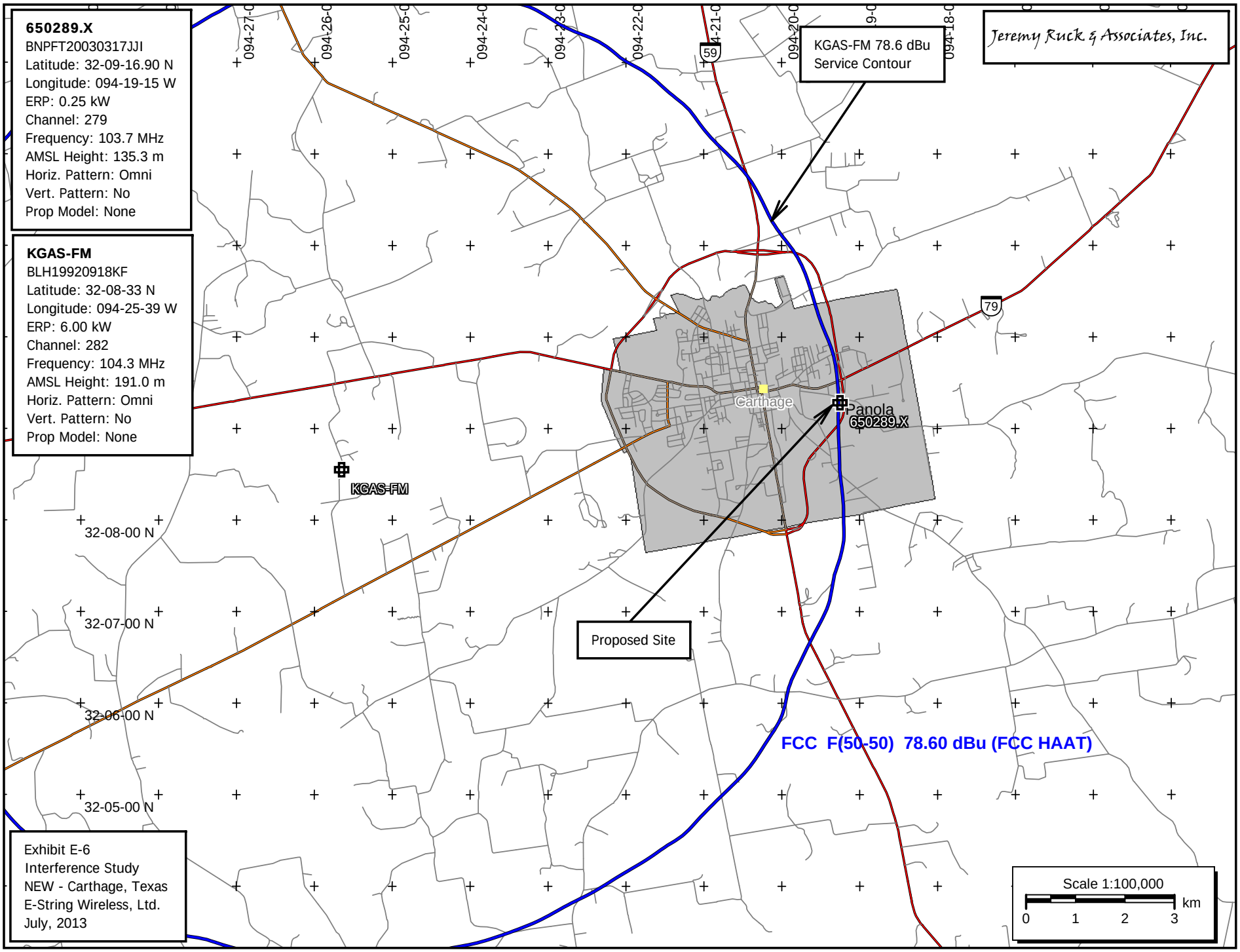
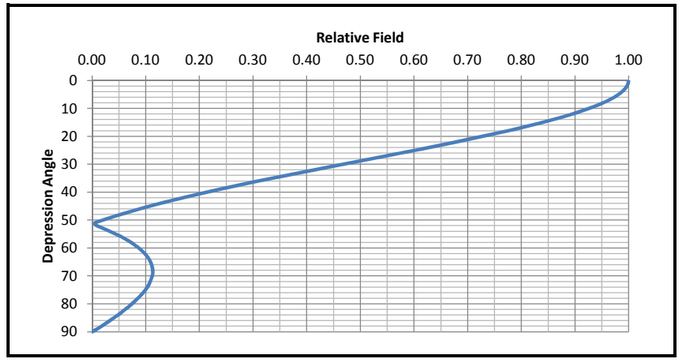
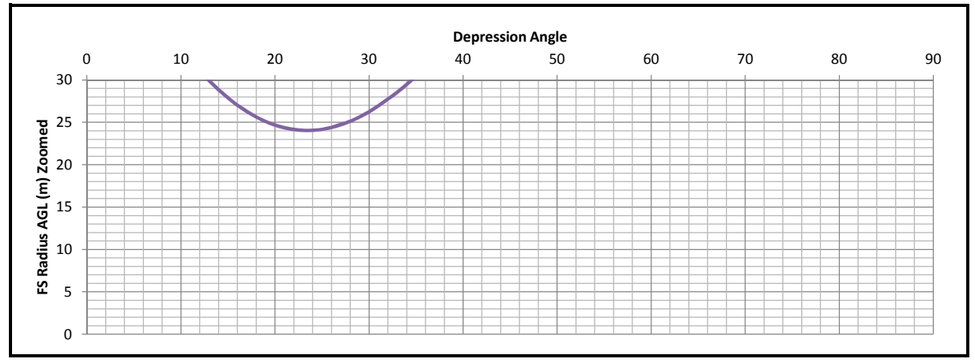

650289.X
BNPFT20030317JJI
Latitude: 32-09-16.90 N
Longitude: 094-19-15 W
ERP: 0.25 kW
Channel: 279
Frequency: 103.7 MHz
AMSL Height: 135.3 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
KGAS-FM
BLH19920918KF
Latitude: 32-08-33 N
Longitude: 094-25-39 W
ERP: 6.00 kW
Channel: 282
Frequency: 104.3 MHz
AMSL Height: 191.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None
Exhibit E-6
Interference Study
NEW - Carthage, Texas
E-String Wireless, Ltd.
July, 2013
Jeremy Ruck & Associates, Inc.
KGAS-FM 78.6 dBu
Service Contour
Proposed Site
KGAS-FM
Carthage
Panola
650289.X
59
79
094-27-0
094-26-0
094-25-0
094-24-0
094-23-0
094-22-0
094-21-0
094-20-0
094-18-0
32-08-00 N
32-07-00 N
32-06-00 N
32-05-00 N
FCC F(50-50) 78.60 dBu (FCC HAAT)
Scale 1:100,000
km
0
1
2
3

Exhibit E-7
Translator Proximity Interference Analysis
NEW - Carthage, Texas

Antenna No:	72	Center of Radiation:	50 m AGL
Manufacturer:	Shively	Effective Radiated Power:	250 Watts
Model:	6832-2	FS Contour:	118.6 dBu
Number of Bays:	2	E Field Strength:	0.85114 V/m
Bay Spacing:	Lambda	Z0 (Ohms):	377 Ohms
		Power Density:	0.001921581 W/m^2





Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	250.00	101.75	101.75	0.00	50.00
1	0.9990	0.9980	249.50	101.65	101.63	1.77	48.23
2	0.9970	0.9940	248.50	101.45	101.38	3.54	46.46
3	0.9930	0.9860	246.51	101.04	100.90	5.29	44.71
4	0.9880	0.9761	244.04	100.53	100.28	7.01	42.99
5	0.9810	0.9624	240.59	99.82	99.44	8.70	41.30
6	0.9730	0.9467	236.68	99.00	98.46	10.35	39.65
7	0.9630	0.9274	231.84	97.99	97.26	11.94	38.06
8	0.9520	0.9063	226.58	96.87	95.92	13.48	36.52
9	0.9400	0.8836	220.90	95.65	94.47	14.96	35.04
10	0.9260	0.8575	214.37	94.22	92.79	16.36	33.64
11	0.9110	0.8299	207.48	92.69	90.99	17.69	32.31
12	0.8950	0.8010	200.26	91.07	89.08	18.93	31.07
13	0.8770	0.7691	192.28	89.24	86.95	20.07	29.93
14	0.8590	0.7379	184.47	87.40	84.81	21.14	28.86
15	0.8390	0.7039	175.98	85.37	82.46	22.09	27.91
16	0.8190	0.6708	167.69	83.33	80.11	22.97	27.03
17	0.7970	0.6352	158.80	81.09	77.55	23.71	26.29
18	0.7750	0.6006	150.16	78.86	75.00	24.37	25.63
19	0.7520	0.5655	141.38	76.52	72.35	24.91	25.09
20	0.7280	0.5300	132.50	74.07	69.61	25.33	24.67
21	0.7030	0.4942	123.55	71.53	66.78	25.63	24.37
22	0.6780	0.4597	114.92	68.99	63.96	25.84	24.16
23	0.6530	0.4264	106.60	66.44	61.16	25.96	24.04
24	0.6270	0.3931	98.28	63.80	58.28	25.95	24.05
25	0.6010	0.3612	90.30	61.15	55.42	25.84	24.16
26	0.5740	0.3295	82.37	58.40	52.49	25.60	24.40
27	0.5470	0.2992	74.80	55.66	49.59	25.27	24.73
28	0.5210	0.2714	67.86	53.01	46.81	24.89	25.11
29	0.4940	0.2440	61.01	50.26	43.96	24.37	25.63
30	0.4670	0.2181	54.52	47.52	41.15	23.76	26.24
31	0.4400	0.1936	48.40	44.77	38.38	23.06	26.94
32	0.4130	0.1706	42.64	42.02	35.64	22.27	27.73
33	0.3870	0.1498	37.44	39.38	33.02	21.45	28.55
34	0.3610	0.1303	32.58	36.73	30.45	20.54	29.46
35	0.3350	0.1122	28.06	34.09	27.92	19.55	30.45
36	0.3090	0.0955	23.87	31.44	25.44	18.48	31.52
37	0.2840	0.0807	20.16	28.90	23.08	17.39	32.61
38	0.2600	0.0676	16.90	26.46	20.85	16.29	33.71
39	0.2360	0.0557	13.92	24.01	18.66	15.11	34.89
40	0.2130	0.0454	11.34	21.67	16.60	13.93	36.07
41	0.1900	0.0361	9.03	19.33	14.59	12.68	37.32
42	0.1680	0.0282	7.06	17.09	12.70	11.44	38.56
43	0.1470	0.0216	5.40	14.96	10.94	10.20	39.80
44	0.1260	0.0159	3.97	12.82	9.22	8.91	41.09
45	0.1070	0.0114	2.86	10.89	7.70	7.70	42.30

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.1070	0.0114	2.86	10.89	7.70	7.70	42.30
46	0.0880	0.0077	1.94	8.95	6.22	6.44	43.56
47	0.0690	0.0048	1.19	7.02	4.79	5.13	44.87
48	0.0520	0.0027	0.68	5.29	3.54	3.93	46.07
49	0.0360	0.0013	0.32	3.66	2.40	2.76	47.24
50	0.0200	0.0004	0.10	2.04	1.31	1.56	48.44
51	0.0050	0.0000	0.01	0.51	0.32	0.40	49.60
52	0.0090	0.0001	0.02	0.92	0.56	0.72	49.28
53	0.0210	0.0004	0.11	2.14	1.29	1.71	48.29
54	0.0330	0.0011	0.27	3.36	1.97	2.72	47.28
55	0.0450	0.0020	0.51	4.58	2.63	3.75	46.25
56	0.0550	0.0030	0.76	5.60	3.13	4.64	45.36
57	0.0640	0.0041	1.02	6.51	3.55	5.46	44.54
58	0.0730	0.0053	1.33	7.43	3.94	6.30	43.70
59	0.0800	0.0064	1.60	8.14	4.19	6.98	43.02
60	0.0870	0.0076	1.89	8.85	4.43	7.67	42.33
61	0.0930	0.0086	2.16	9.46	4.59	8.28	41.72
62	0.0980	0.0096	2.40	9.97	4.68	8.80	41.20
63	0.1030	0.0106	2.65	10.48	4.76	9.34	40.66
64	0.1060	0.0112	2.81	10.79	4.73	9.69	40.31
65	0.1090	0.0119	2.97	11.09	4.69	10.05	39.95
66	0.1110	0.0123	3.08	11.29	4.59	10.32	39.68
67	0.1120	0.0125	3.14	11.40	4.45	10.49	39.51
68	0.1130	0.0128	3.19	11.50	4.31	10.66	39.34
69	0.1130	0.0128	3.19	11.50	4.12	10.73	39.27
70	0.1120	0.0125	3.14	11.40	3.90	10.71	39.29
71	0.1100	0.0121	3.03	11.19	3.64	10.58	39.42
72	0.1080	0.0117	2.92	10.99	3.40	10.45	39.55
73	0.1060	0.0112	2.81	10.79	3.15	10.31	39.69
74	0.1030	0.0106	2.65	10.48	2.89	10.07	39.93
75	0.0990	0.0098	2.45	10.07	2.61	9.73	40.27
76	0.0950	0.0090	2.26	9.67	2.34	9.38	40.62
77	0.0900	0.0081	2.03	9.16	2.06	8.92	41.08
78	0.0850	0.0072	1.81	8.65	1.80	8.46	41.54
79	0.0800	0.0064	1.60	8.14	1.55	7.99	42.01
80	0.0740	0.0055	1.37	7.53	1.31	7.42	42.58
81	0.0680	0.0046	1.16	6.92	1.08	6.83	43.17
82	0.0610	0.0037	0.93	6.21	0.86	6.15	43.85
83	0.0550	0.0030	0.76	5.60	0.68	5.55	44.45
84	0.0480	0.0023	0.58	4.88	0.51	4.86	45.14
85	0.0400	0.0016	0.40	4.07	0.35	4.05	45.95
86	0.0330	0.0011	0.27	3.36	0.23	3.35	46.65
87	0.0250	0.0006	0.16	2.54	0.13	2.54	47.46
88	0.0170	0.0003	0.07	1.73	0.06	1.73	48.27
89	0.0090	0.0001	0.02	0.92	0.02	0.92	49.08
90	0.0000	0.0000	0.00	0.00	0.00	0.00	50.00