

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

**FM STATION KXBJ(FM)
FM CHANNEL 245C0
EL CAMPO, TEXAS**

KSBJ EDUCATIONAL FOUNDATION

SEPTEMBER, 2016

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **KSBJ Educational Foundation** ("KSBJ"), licensee of Non-Commercial Educational station KXBJ at El Campo, Texas, and are in support of their application for construction permit.¹ This application seeks to update elevation data associated with the facility, as well as convert from a non-directional antenna to a directional antenna, and to bring the coordinates into agreement with the Antenna Structure Registration data.

The current license for KXBJ, under FCC File No. BMLED-20130717AIL, specifies operation on FM channel 245C0 with a maximum effective radiated power of 100 kW at a center of radiation of 457 meters above mean sea level, or 450 meters above average terrain. It appears that the average terrain values utilized were obtained through a sample of 30-second terrain. Additionally, the center of radiation elevation appears to be inconsistent with the site elevation listed on the antenna structure registration.

As indicated on the ASRN data, the site elevation is 6.7 meters above mean sea level. The antenna center of radiation is 449.2 meters above ground level. This yields a center of radiation elevation of 455.9 meters above mean sea level. Average terrain, determined through an eight radial sample of the FCC 30-meter linearly terrain database is 7.7 meters above mean sea level. The resulting center of radiation above average terrain for KXBJ is 448.2 meters. It should be noted that no actual physical change in the antenna elevation has occurred.

¹ The Facility ID for KXBJ(FM) at El Campo, Texas is 36507.

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 current license for the facility specifies operation utilizing a non-directional antenna, which is also utilized by FM station KNTE at Bay City, Texas.² Investigation of this antenna indicates that the variance between the maximum and minimum relative field values are greater than would normally be experienced, even when the tower face size is considered. As a result, KSBJ seeks to modify the license for KXBJ such that a directional antenna is listed. The directional pattern envelope is based on the actual measured composite directional pattern for the antenna, with nominal changes at certain azimuths to bring the slope into compliance with the provisions of Section 73.316 of the Commission's Rules.

The proposed facility complies with the provisions of Section 73.203 of the Commission's Rules. Channel 245C0 is currently allocated to El Campo, Texas. This application proposes no changes to the allocation associated with the facility.

The proposed facility would comply with the community coverage requirements of Section 73.315 of the Commission's Rules. Exhibit E-1 illustrates the predicted 70 dBu and 60 dBu service contours for KXBJ as determined through the Commission's standard method.³ Exhibit E-2 provides greater detail in the vicinity of the community of license. These two maps demonstrate that the predicted 70 dBu service contour fully encompasses El Campo, Texas. Additionally, there are no major terrain obstructions between the transmitter site and the community of license.

² The Facility ID for KNTE(FM) at Bay City, Texas is 2131.

³ Contours determined through a sample of the FCC 30-meter terrain database.

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 main studio for KXBJ does not comply with the provisions of Section 73.1125. KXBJ is authorized to operate as a satellite facility of KSBJ(FM) at Humble, Texas, by main studio waiver.⁴ KSBJ wishes to continue to operate KXBJ as such, and will abide by all of the representations proffered in the waiver request.

The proposed facility complies with the applicable sections of the Commission's Rules with regard to interference protection. Section 73.207 is applicable to KXBJ, while sections 73.215 and 73.213 are not. Exhibit E-3 is a single channel spacing study for the KXBJ. This study demonstrates that the spacing requirements would be met to all facilities, with the exception of the current construction permit for KWYU at Christine, Texas.⁵

The current construction permit for KWYU is under FCC File No. BNPH-20151009AIB. That application requested processing under Section 73.215 due to the short spacing to KXBJ, and proposed the use of a directional antenna to provide contour protection to KXBJ. As was previously indicated, no change in the physical location of KXBJ is proposed, but a shift in the coordinates of one second results from a necessary correction to bring the KXBJ technical parameters into compliance with the ASR data. As a result, it is respectfully submitted that KXBJ continue to be authorized under Section 73.207.

The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. All that is necessary to implement this construction permit is a

⁴ The Facility ID for KSBJ(FM) at Humble, Texas is 35590.

⁵ The Facility ID for KWYU(FM) at Christine, Texas is 198739.

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

reduction in the transmitter power output of KXBJ. There will be no change in the calculated power density at ground level, which complies with the uncontrolled environment condition of the Commission's safety standard.

The following table summarizes the power density contribution from each of the facilities on the tower based on a worst-case analysis. This worst-case analysis assumes that each facility operates as a point source. Calculated power density values are determined through the equations in Appendix A of *OET Bulletin 65*. The power density values are in $\mu\text{W}/\text{cm}^2$.

Callsign	City of License	Facility ID	ERP (kW)	COR AGL (m)	Power Density
KQUE	Bay City	91338	3.6	433.7	1.29
KABA	Louise	123270	3.6	423	1.36
KXBJ	El Campo	36507	100	449.2	33.4
KNTE	Bay City	2131	35	449.2	11.7

The calculated values were based on a height of 2 meters above ground level. The sum of the values is $47.8 \mu\text{W}/\text{cm}^2$. This value is less than the upper limit permissible under the uncontrolled environment condition of the Commission's safety standard, and is assumed to exist at all locations within the vicinity of the tower.

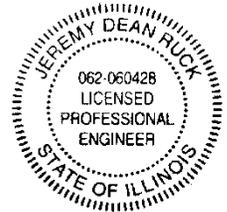
KSBJ certifies that it will coordinate with all other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Coordination activities will include, but are not necessarily limited to, a reduction in transmitter power, or cessation of operation.

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 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, 2017

Jeremy D. Ruck, PE
September 13, 2016

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

KXBJ.X
BMLED20130717A1L
Latitude: 28-48-00 N
Longitude: 096-07-32 W
ERP: 100.00 kW
Channel: 245
Frequency: 96.9 MHz
AMSL Height: 455.9 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

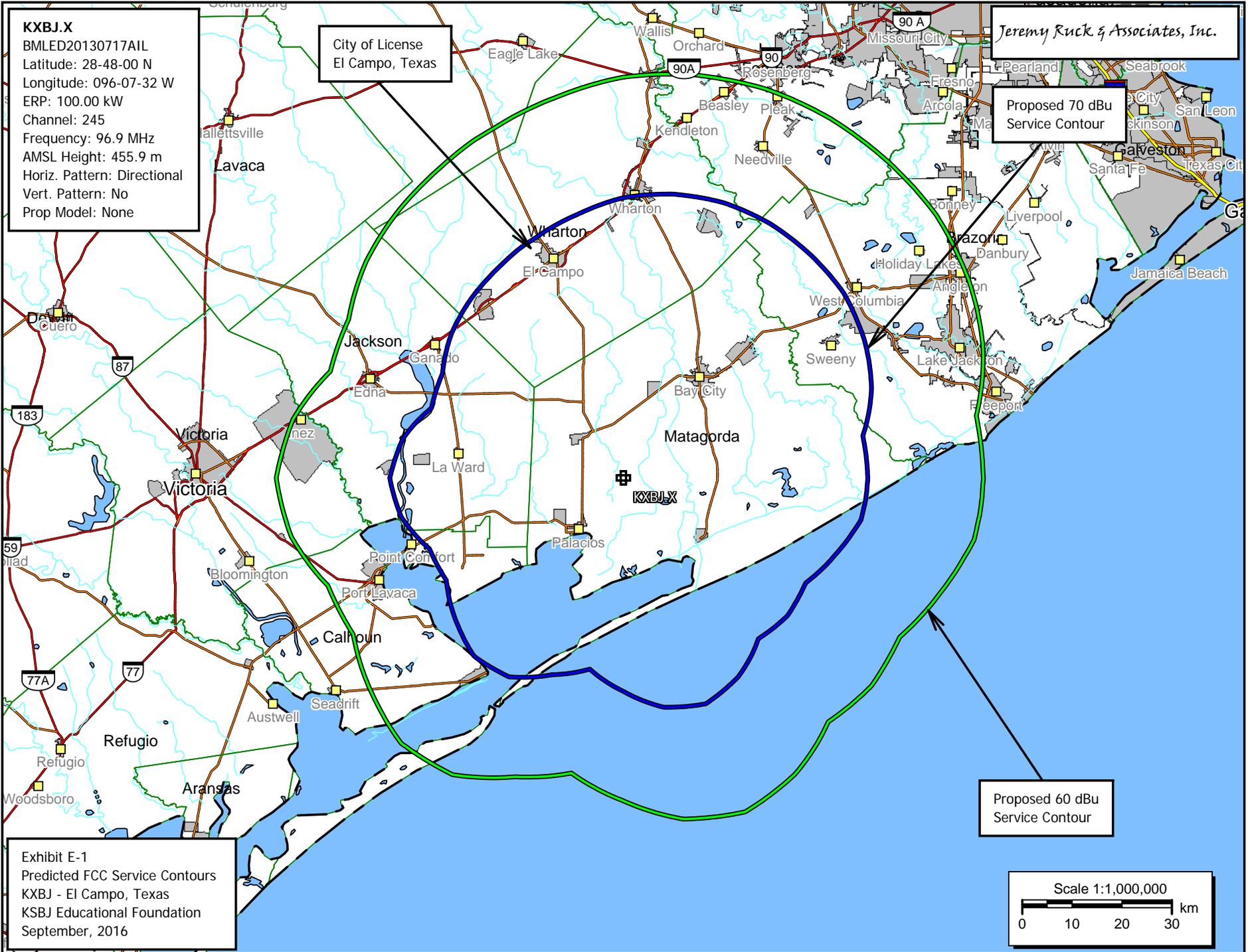
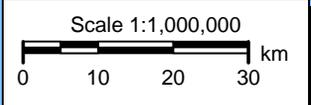
City of License
El Campo, Texas

Jeremy Ruck & Associates, Inc.

Proposed 70 dBu
Service Contour

Proposed 60 dBu
Service Contour

Exhibit E-1
Predicted FCC Service Contours
KXBJ - El Campo, Texas
KSBJ Educational Foundation
September, 2016



KXBJ.X
BMLED20130717AIL
Latitude: 28-48-00 N
Longitude: 096-07-32 W
ERP: 100.00 kW
Channel: 245
Frequency: 96.9 MHz
AMSL Height: 455.9 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

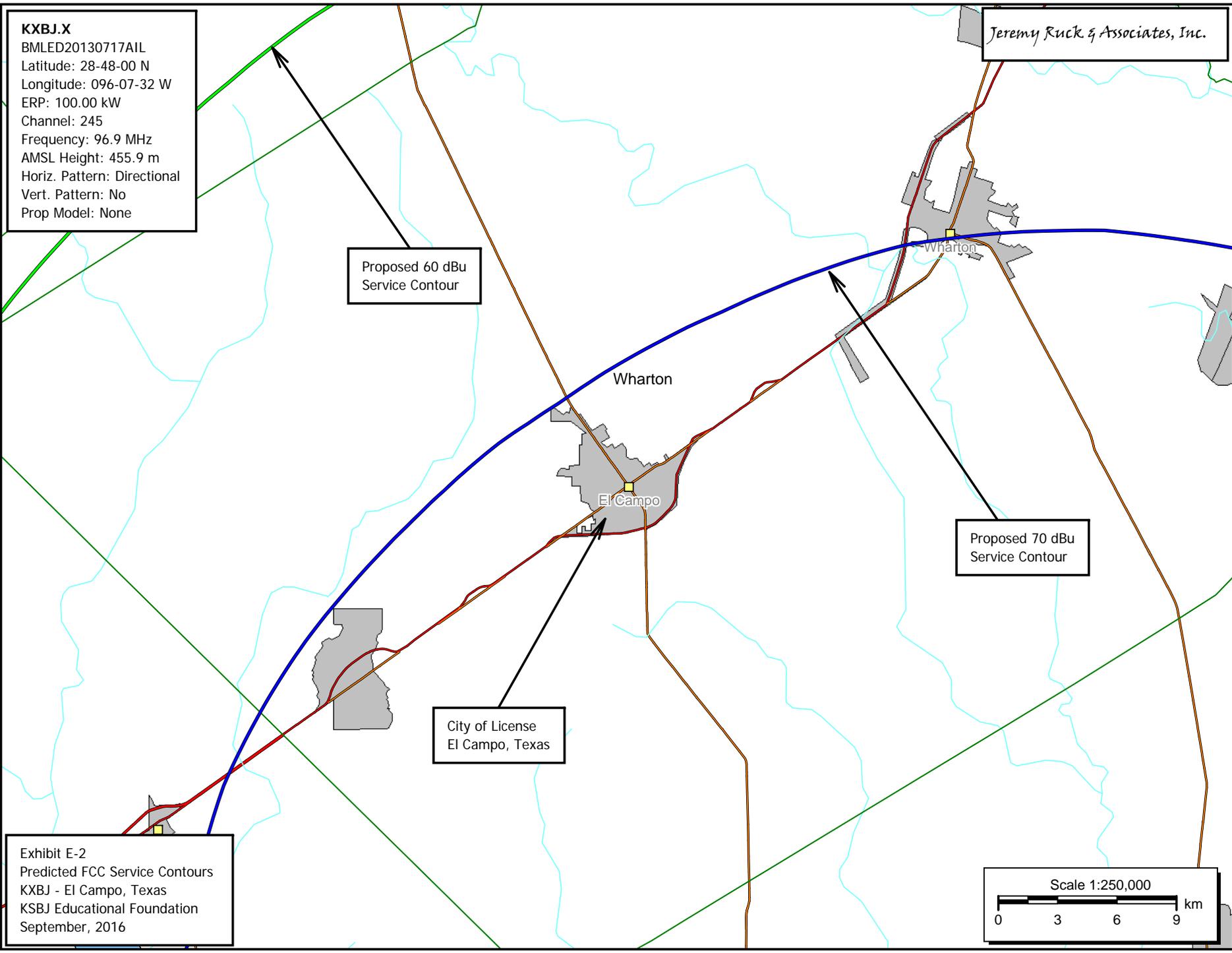
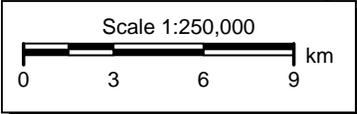
Jeremy Ruck & Associates, Inc.

Proposed 60 dBu
Service Contour

Proposed 70 dBu
Service Contour

City of License
El Campo, Texas

Exhibit E-2
Predicted FCC Service Contours
KXBJ - El Campo, Texas
KSBJ Educational Foundation
September, 2016



Jeremy Ruck & Associates, Inc.
 Consulting Engineers - Canton, Illinois
 Exhibit E-3 - Single Channel Spacing Study
 KXBJ - El Campo, Texas

REFERENCE		DISPLAY DATES
28 48 00.0 N.	CLASS = C0 Int = C	DATA 09-07-16
96 07 32.0 W.	Current Spacings to 3rd Adj.	SEARCH 09-13-16
----- Channel 245 - 96.9 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
KXBJ	LIC 245C0	El Campo	TX 277.4	0.02	269.5	-269.5
KWYU	CP -Z 245C3	Christine	TX 270.5	215.86	225.5	-9.6
KHMX	LIC 243C	Houston	TX 34.5	104.80	104.5	0.30
KTHT	LIC 246C	Cleveland	TX 28.7	220.19	219.5	0.7
NEW	CP -Z 247A	Garwood	TX 331.0	93.31	85.5	7.8
KHFI-FM	LIC 244C1	Georgetown	TX 316.7	234.14	195.5	38.6
KGGB	LIC-N 242A	Yorktown	TX 282.7	127.82	85.5	42.3

 All separation margins include rounding