

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

**FM TRANSLATOR STATION K229CW
WAMEGO, KANSAS
93.7 MHz / 0.250 kW ERP**

UNIVERSITY OF KANSAS

AUGUST, 2015

APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **University of Kansas** ("KU"), permittee of FM translator station K229CW at Manhattan, Kansas, and are in support of their application for modification of construction permit.¹

This application seeks to relocate the facility from its currently authorized site to an existing tower near Wamego, Kansas. As part of this application, a change in the community of license to Wamego, Kansas is also requested. Due to the physical change in the location of the translator, the technical parameters associated with the facility would necessarily change. No change in the authorized channel of operation is proposed under this application.

The proposed facility would operate on FM channel 229 with an effective radiated power of 250 Watts circularly polarized at a center of radiation of 420.6 meters above mean sea level utilizing a non-directional antenna. This elevation corresponds to a center of radiation of 57.9 meters above ground level at the proposed tower location. The relocation in the facility, and change in technical parameters would be a minor change to the existing authorization, which is under FCC File No. BNPFT-20150520AAJ. Exhibit E-1 compares the authorized and proposed 60 dBu service contours, and demonstrates that an area of overlap exists between the two.

The proposed facility would serve as a fill-in translator for AM station KMAN at Manhattan, Kansas.² Exhibit E-2 illustrates the predicted 60 dBu service contour of the proposed facility along with both the 2.0 mV/m daytime service contour of KMAN, and a twenty-five mile radius centered

¹ The Facility ID for K229CW at Manhattan, Kansas is 142509.

² The Facility ID for KMAN at Manhattan, Kansas is 39783.

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on the KMAN transmitter site.³ As this exhibit demonstrates, the 60 dBu contour of the translator would be wholly contained within both constructs.

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 of the Commission's Rules is not applicable to the facility due to the channel of operation.

Exhibit E-3 is a tabular contour overlap 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. This tabular study is graphically illustrated in the contour map in Exhibit E-4.

An application has been filed with the Commission to assign the authorization for K229CW to Manhattan Broadcasting Co., Inc. ("MBC").⁴ Additionally, an application to assign the authorization of K227CX at Manhattan, Kansas to MBC is pending before the Commission.⁵ The licensee of K227CX has filed an application to modify that facility on behalf of MBC, the proposed assignee.⁶ Although these two facilities are located in the same general area, and 60 dBu contour overlap exists between the two proposed facilities, the area of overlap is less than fifty percent of either contour.

³ All contours depicted in this application were derived through the use of the NED 3-second linearly interpolated terrain database.

⁴ See FCC File No. BAPFT-20150806AAC.

⁵ The Facility ID for K227CX at Manhattan, Kansas is 142250. See FCC File No. BAPFT-20150706ACC.

⁶ See FCC File No. BMPFT-20150811AAZ.

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Exhibit E-5 illustrates the proposed 60 dBu service contours for both K227CX and K229CW along with the area of their common overlap. The area of the proposed K227CX 60 dBu contour is 724 square kilometers, while the proposed K229CW 60 dBu contour has an area of 469 square kilometers. The area where the two contours overlap is 58.6 square kilometers. Thus, the overlap area is 8.1 percent of the K227CX contour area and 12.5 percent of the K229CW contour area.

The proposed facility does not constitute a significant environmental impact, and is exempt from environmental processing. The proposed facility would utilize an existing tower. The addition of the K229CW antenna to this structure would not increase the existing environmental impact already present.

In addition, K229CW would not result in a radiofrequency radiation 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 $5.34 \mu\text{W}/\text{cm}^2$ at two meters above ground as calculated through the use of the equations in Appendix A of *OET Bulletin 65*. This value is considerably less than the upper limit permissible under the uncontrolled environment condition of the applicable safety standard. KU 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.

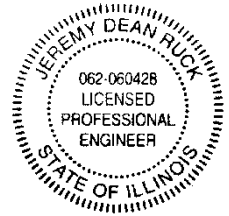
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8.12.2015

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
August 12, 2015

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8.12.2015

K229CW.X

BNPFT20150520AAJ
Latitude: 39-12-39.40 N
Longitude: 096-21-08.90 W
ERP: 0.25 kW
Channel: 229
Frequency: 93.7 MHz
AMSL Height: 420.6 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

K229CW.C

BNPFT20150520AAJ
Latitude: 39-13-33.80 N
Longitude: 096-37-00.50 W
ERP: 0.045 kW
Channel: 229
Frequency: 93.7 MHz
AMSL Height: 495.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Exhibit E-1

Service Contour Comparison
K229CW - Wamego, Kansas
University of Kansas
August, 2015

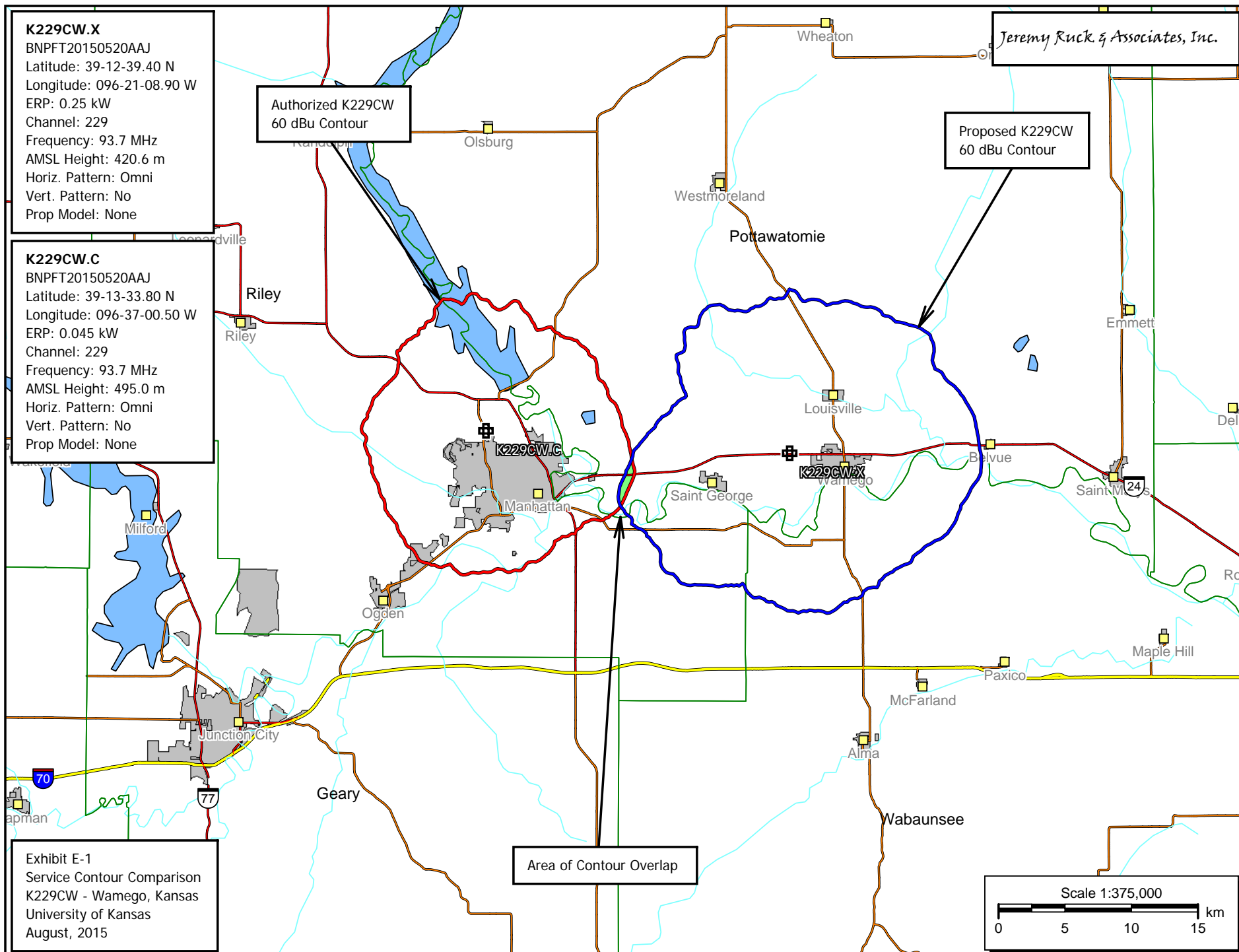
Authorized K229CW
60 dBu Contour

Proposed K229CW
60 dBu Contour

Area of Contour Overlap

Scale 1:375,000

0 5 10 15 km



Jeremy Ruck & Associates, Inc.

BNPFT20150520AAJ
Latitude: 39-12-39.40 N
Longitude: 096-21-08.90 W
ERP: 0.25 kW
Channel: 229
Frequency: 93.7 MHz
AMSL Height: 420.6 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

KMAN 25 Mi
Site Radius

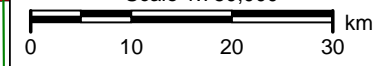
Jeremy Ruck & Associates, Inc.

KMAN 2 mV/m
Daytime Contour

Exhibit E-2
Service Contour Comparison
K229CW - Wamego, Kansas
University of Kansas
August, 2015

Proposed K229CW
60 dBu Contour

Scale 1:750.000



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Consulting Engineers - Canton, Illinois

Exhibit E-3 - Tabular Contour Overlap Study

REFERENCE
39 12 39.4 N.
96 21 08.9 W.

CH# 229D - 93.7 MHz, Pwr= 0.25 kW, HAAT= 89.5 M, COR= 420.6 M
Average Protected F(50-50)= 12.2 km
Omni-directional

DISPLAY DATES
DATA 08-11-15
SEARCH 08-12-15

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
229C1 Salina	KYEZ	LIC_CN KS		255.6 74.8	112.06 BLH6686	38 57 14.0 97 36 29.0	100.000 155	156.6 538	59.8 Mcc Radio, Llc	-57.8*	6.7
229C3 Horton	KAIR-FM	LIC_CN KS		62.2 242.8	100.50 BLH19950206KE	39 37 43.0 95 18 53.0	25.000 100	114.3 429	39.7 Knza Inc.	-26.7*	16.3
229D Manhattan	K229CW	CP_CN KS		274.3 94.1	22.83 BNPFT20150520AAJ	39 13 33.8 96 37 00.5	0.045	35.9 495	10.8 University Of Kansas	-24.3*	-26.3*
227D Manhattan	K227CX	CP_CN KS		315.4 135.3	20.30 BNPFT20150518AAQ	39 20 27.0 96 31 06.0	0.140	0.8 467	12.0 Great Plains Christian Rad	8.3	7.2
229C3 Pleasanton	KPI0-FM	LIC_CN KS		131.0 311.9	163.08 BLED20090424AAI	38 14 23.0 94 56 36.0	25.000 100	113.1 389	38.6 Catholic Radio Network, In	37.8	82.6
229D Emporia	K229CG	CP_CN KS		169.6 349.7	91.40 BNPFT20130328ATN	38 24 08.0 96 09 45.0	0.250 69	36.1 420	10.7 E-string Wireless, Ltd	43.3	39.4

Terrain database is NED 03 SEC, R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone= West Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
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 restricted contour.

BNPFT20150520AAJ
Latitude: 39-12-39.40 N
Longitude: 096-21-08.90 W
ERP: 0.25 kW
Channel: 229
Frequency: 93.7 MHz
AMSL Height: 420.6 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None






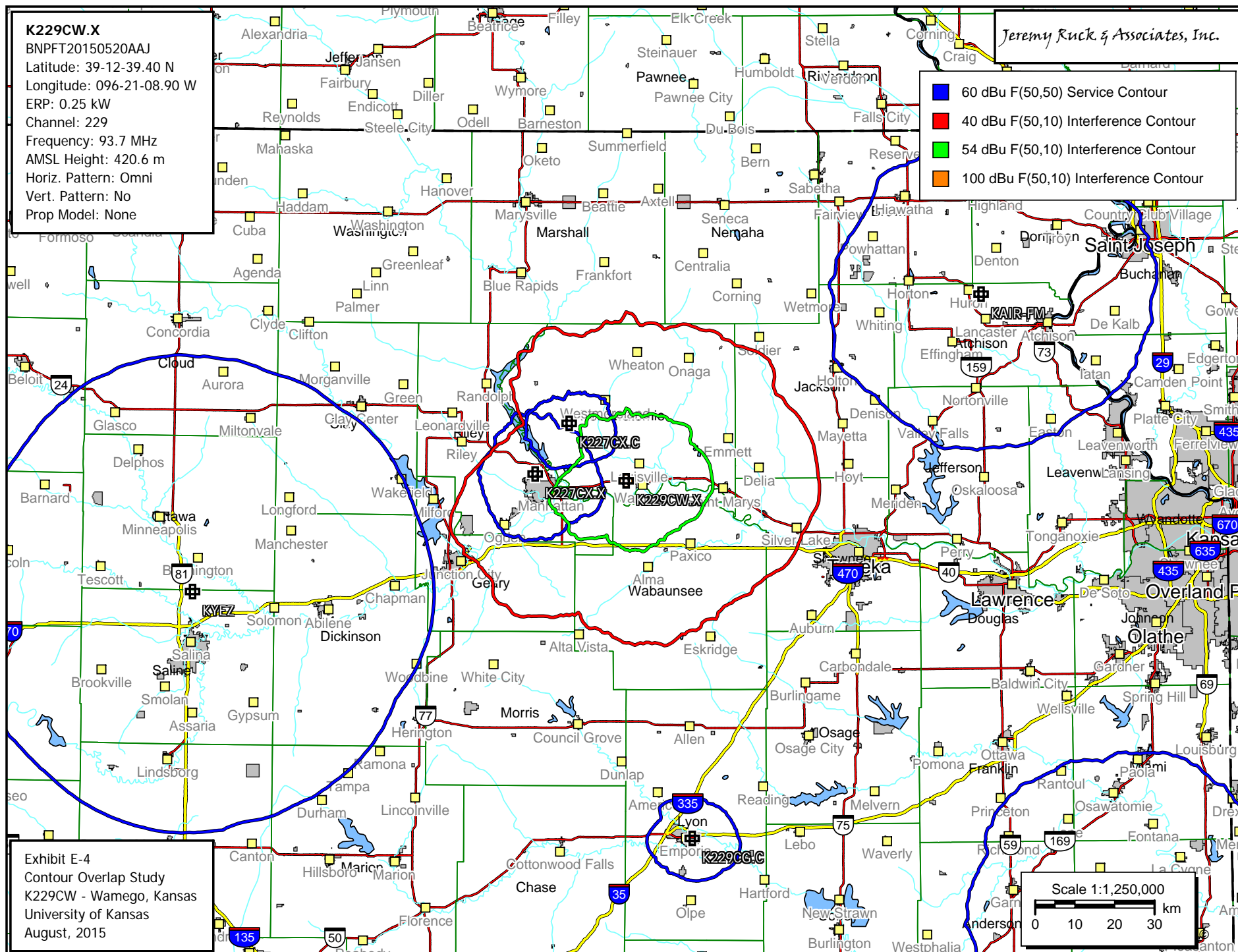
-  60 dBu F(50,50) Service Contour
-  40 dBu F(50,10) Interference Contour
-  54 dBu F(50,10) Interference Contour
-  100 dBu F(50,10) Interference Contour

Exhibit E-4
Contour Overlap Study
K229CW - Wamego, Kansas
University of Kansas
August, 2015

Scale 1:1,250,000



0 10 20 30 km



K229CW.X

BNPFT20150520AAJ
Latitude: 39-12-39.40 N
Longitude: 096-21-08.90 W
ERP: 0.25 kW
Channel: 229
Frequency: 93.7 MHz
AMS Height: 420.6 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

K227CX.A

BMPFT20150811AAZ
Latitude: 39-13-34 N
Longitude: 096-37-00 W
ERP: 0.25 kW
Channel: 227
Frequency: 93.3 MHz
AMS Height: 497.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Proposed K227CX
60 dBu Contour

Jeremy Ruck & Associates, Inc.

Proposed K229CW
60 dBu Contour

Area of Contour Overlap

Exhibit E-5
Service Contour Comparison
K229CW - Wamego, Kansas
University of Kansas
August, 2015

Scale 1:400,000

0 5 10 15 km

