

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

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**KTUO-LD - TULSA, OKLAHOMA**  
**FACILITY ID: 190113**

**DIGITAL NETWORKS—MIDWEST, LLC**

**NOVEMBER 2018**

## **APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT**

The following engineering statement and attached exhibits have been prepared for **Digital Networks-Midwest, LLC** ("Midwest"), permittee of low-power digital television station KTUO-LD at Tulsa, Oklahoma, and are in support of their application for modification of construction permit.<sup>1</sup> This application proposes a minor change to the construction permit for KTUO-LD, which is under FCC File No. BDCCDTL-20111219ADK.

Under the referenced construction permit, KTUO-LD is authorized to operate on channel 23 with an effective radiated power of 15 kW at a center of radiation of 596 meters above mean sea level, 400 meters above ground level, utilizing a non-directional antenna. It is proposed under this application, that the center of radiation and maximum effective radiated power be reduced, and the antenna changed to a directional array. The proposed facility would therefore operate with a maximum effective radiated power of 5.15 kW at a center of radiation of 226 meters above mean sea level, 30 meters above ground, utilizing a directional antenna array. The proposed antenna system would consist of a vertical stack of two Kathrein-Scala PR-TV antennas oriented at 300 degrees true.

Since no change in the geographic location of the transmitter site is proposed under this application, the proposed facility would comply with the minor change provisions of Section 73.3572 of the Commission's Rules. The proposed and authorized 51 dBu F(50,90) service contours necessarily overlap each other. Exhibit E-1 provides a comparison between these two contours.

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<sup>1</sup> The Facility ID for KTUO-LD at Tulsa, Oklahoma is 190113.

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The proposed technical parameters would not result in interference to other proposed, authorized, or licensed facilities in excess of that permitted under the Commission's Rules. Exhibit E-2 provides tabular output from *TVStudy*. This study demonstrates no interference check failures.

The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed antenna would be mounted to an existing tower that is registered with the Commission. The addition of the antenna to this tower would not increase the existing environmental impact already present from the tower.

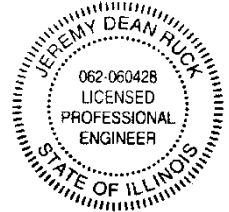
Using the equations in Supplement A of *OET Bulletin 65*, the calculated worst-case power density at ground level assuming a downward radiation relative field of 0.1 is  $2.19 \mu\text{W}/\text{cm}^2$ . This value is less than the upper limit of the uncontrolled environment condition upper limit. Midwest 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.

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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, 2019

Jeremy D. Ruck, PE  
November 26, 2018

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11.26.2018

**KTUO-LD.C**  
BDCCDTL-20111219ADK  
Latitude: 35-58-08 N  
Longitude: 095-36-56 W  
ERP: 15.00 kW  
Channel: 23  
Frequency: 527.0 MHz  
AMSL Height: 596.0 m  
Horiz. Pattern: Omni

**KTUO-LD.X**  
BDCCDTL-20111219ADK  
Latitude: 35-58-08 N  
Longitude: 095-36-56 W  
ERP: 5.15 kW  
Channel: 23  
Frequency: 527.0 MHz  
AMSL Height: 226.0 m  
Horiz. Pattern: Directional

*Jeremy Ruck & Associates, Inc.*

- Authorized KTUO-LD 51 dBu F(50,90) Contour
- Proposed KTUO-LD 51 dBu F(50,90) Contour

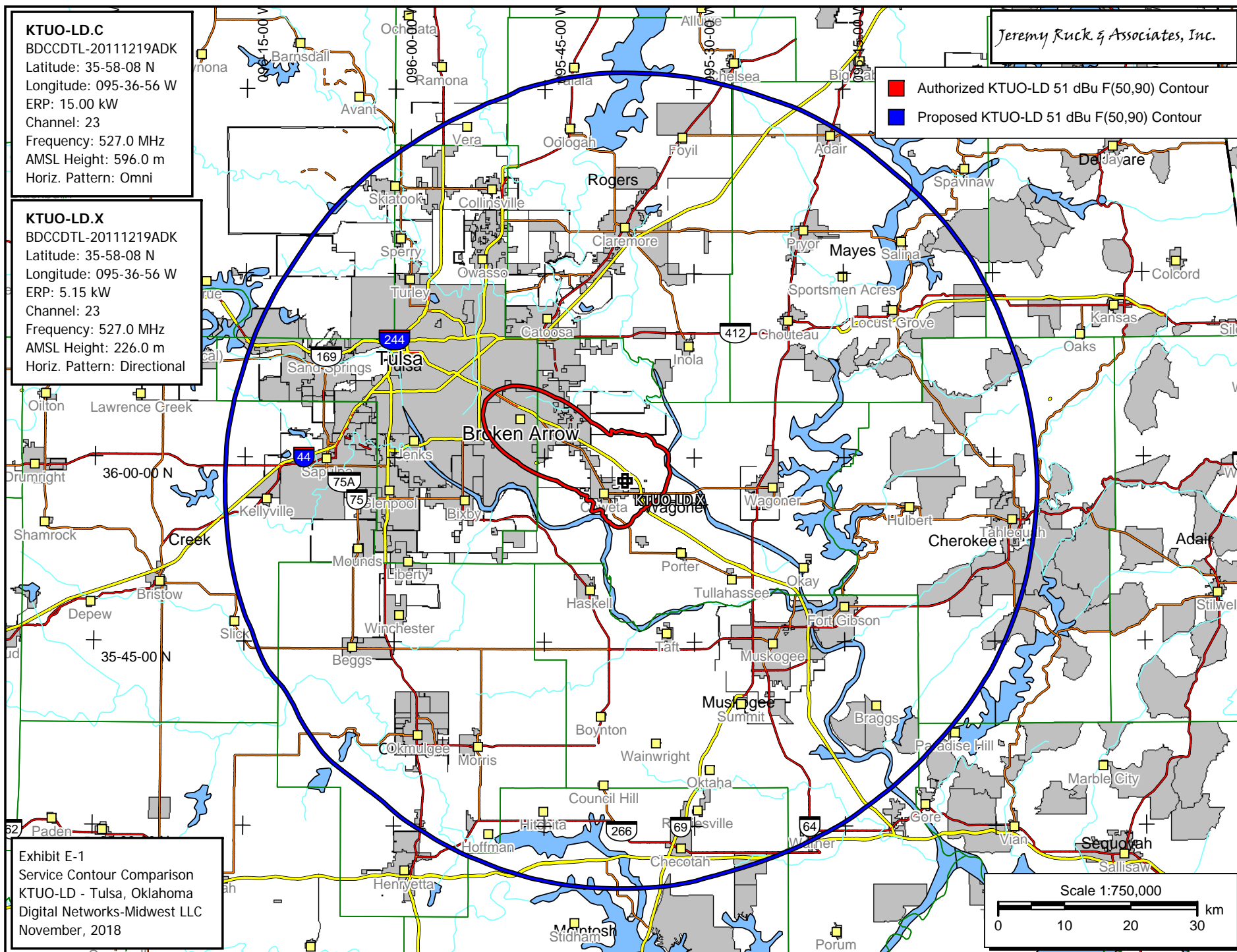


Exhibit E-1  
Service Contour Comparison  
KTUO-LD - Tulsa, Oklahoma  
Digital Networks-Midwest LLC  
November, 2018

## Exhibit E-2 - TVStudy Interference Study

Study created: 2018.11.26 16:32:09

Study build station data: LMS TV 2018-11-25

Proposal: KTUO-LD D23 LD CP TULSA, OK  
File number: BDCCDTL20111219ADK  
Facility ID: 190113  
Station data: User record  
Record ID: 226  
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K22HS-D	D22	LD	LIC	EUREKA SPRINGS, AR	BLDTL20110517ADA	173.1 km
No	KGCS-LD	D22	LD	LIC	JOPLIN, MO	BLDTL20080918AAO	156.1
No	KRBK	D22	DT	LIC	OSAGE BEACH, MO	BLANK0000063419	275.5
No	KTOU-LD	D22	LD	CP	OKLAHOMA CITY, OK	BLANK0000051682	181.9
No	KOKI-TV	D22	DT	LIC	TULSA, OK	BLCDDT20021127AGL	8.6
No	KKTN-LD	D23	LD	CP	FORT SMITH, AR	BLANK0000010943	134.4
No	K38OS-D	D23	LD	APP	HOT SPRINGS, AR	BLANK0000052525	294.9
No	KJEP-LP	N23-	TX	LIC	NASHVILLE, AR	BLTTTL19960111AE	275.8
No	K23LY-D	D23	LD	CP	EMPORIA, KS	BNPDTL20100930ARP	279.3
No	KSNL-LD	D23	LD	LIC	SALINA, KS	BLANK0000059950	367.1
No	KCTU-LD	D23	LD	CP	WICHITA, KS	BLANK0000031023	244.9
No	KSLA	D23	DT	CP	SHREVEPORT, LA	BLANK0000034150	397.4
No	KODE-TV	D23	DT	CP	JOPLIN, MO	BLANK0000034841	155.3
No	KCDN-LD	D23	LD	CP	KANSAS CITY, MO	BLANK0000051767	353.0
No	K23MS-D	D23	LD	LIC	Kansas city, MO	BLANK0000058560	368.1
No	K23MS-D	D23	LD	CP	Kansas city, MO	BLANK0000059054	347.9
No	K23LE-D	D23	LD	CP	SEDALIA, MO	BNPDTL20100319AEZ	357.0
No	KOZK	D23	DT	LIC	SPRINGFIELD, MO	BLEDT20030911AAS	273.4
No	KSBI	D23	DT	LIC	OKLAHOMA CITY, OK	BLANK0000055374	174.0
No	K23LJ-D	D23	LD	CP	PONCA CITY, OK	BNPDTL20100216ABA	189.1
No	K23NH-D	D23	LD	LIC	SEILING, OK	BLANK0000058916	300.4
No	K23IZ-D	D23	LD	LIC	STRONG CITY, OK	BLDTT20100521AEH	358.3
No	KQDA-LD	D23	LD	CP	DENISON, TX	BLANK0000001210	277.6
No	KQDA-LD	D23	LD	LIC	DENISON, TX	BLDTL20150106ABO	231.2
No	KUVN-DT	D23	DT	LIC	GARLAND, TX	BLCDDT20110919ACP	395.7
No	KTXD-TV	D23	DT	CP	GREENVILLE, TX	BLANK0000034280	395.7
No	K40HZ	D23-	LD	CP	WICHITA FALLS, TX	BLANK0000052116	352.3
No	KFSM-TV	D24	LD	LIC	FORT SMITH, AR	BLCDDT20110517AEQ	126.2
No	KEGW-CD	D24	DC	LIC	SILOAM SPRINGS, AR	BLANK0000052722	129.6
Yes	KZLL-LD	D24	LD	CP	JOPLIN, MO	BLANK0000051609	44.7
No	KRLJ-LD	D24	LD	CP	JOPLIN, MO	BLANK0000052709	159.1
No	KOKH-TV	D24	DT	LIC	OKLAHOMA CITY, OK	BLCDDT20041207ACV	175.3
No	KTUL	D24	LD	LIC	TULSA, OK	BLCDDT20140421ADF	109.4
No	KTUL	D24	LD	APP	TULSA, OK	BDRTCDT20110817AAG	114.3
No	K25GJ	N25+	TX	LIC	MUSKOGEE, OK	BLTTT20051206ADA	41.1
No	KCLJ-LP	N30z	TX	LIC	JOPLIN/CARTHAGE, MO	BLTTA20050506ACG	162.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D23  
Mask: Full Service  
Latitude: 35 58 8.00 N (NAD83)  
Longitude: 95 36 56.00 W  
Height AMSL: 226.0 m  
HAAT: 42.6 m  
Peak ERP: 5.15 kW  
Antenna: SCA PR-TV 2@300 True 300.0 deg  
Elev Pattern: Generic  
Elec Tilt: 1.00

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## Exhibit E-2 - TVStudy Interference Study

49.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.014 kW	49.6 m	8.0 km
45.0	0.011	55.0	7.9
90.0	0.005	62.6	6.9
135.0	0.004	44.3	5.5
180.0	0.011	48.0	7.4
225.0	0.012	39.3	6.9
270.0	0.140	22.5	11.1
315.0	1.97	19.9	21.4

Distance to Canadian border: 1265.6 km

Distance to Mexican border: 875.0 km

Conditions at FCC monitoring station: Grand Island NE  
Bearing: 336.9 degrees Distance: 602.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 301.6 degrees Distance: 958.5 km

Study cell size: 1.00 km  
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%  
Maximum new IX to LPTV: 2.00%

---- Below is IX received by proposal BDCCDTL20111219ADK ----

Proposal receives 64.67% interference from scenario 1  
No IX check failures found.

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