TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT

K29LK-D - SPRINGFIELD, MISSOURI
FACILITY ID: 68046

DIGITAL NETWORKS–MIDWEST, LLC

MARCH 2019

JEREMY RUCK & ASSOCIATES, INC.
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APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Digital Networks-Midwest, LLC** ("Midwest"), licensee of digital low power television station K29LK-D at Springfield, Missouri, and are in support of their application for construction permit.[1] This application proposes a minor change to the current license for the facility, which is under LMS File No. 0000063015.

K29LK-D, which is still listed as K41HC in CDBS, is licensed to operate on channel 29 as a digital low power television station with a maximum effective radiated power of 15 kW at a center of radiation of 442.8 meters above mean sea level utilizing a composite directional antenna. It is proposed that the facility be relocated from its current licensed site, to another site in the region. The proposed facility would continue to operate on channel 31, but with a maximum effective radiated power of 1.79 kW at a center of radiation of 423.7 meters above mean sea level, 30 meters above ground level utilizing a composite directional antenna. The proposed antenna consists of two Kathrein-Scala PR-TV paraflector style antennas. One antenna is to be oriented at 185 degrees true, with the other at 325 degrees true.

The proposed relocation of the facility would comply with the minor change provisions of the Commission's Rules. Exhibit E-1 illustrates the licensed and proposed 51 dBu F(50,90) service contours, as well as a 30-mile radius centered on the licensed site. As is demonstrated, the licensed and proposed contours overlap, and the proposed site is located less than 30 miles from the licensed site.

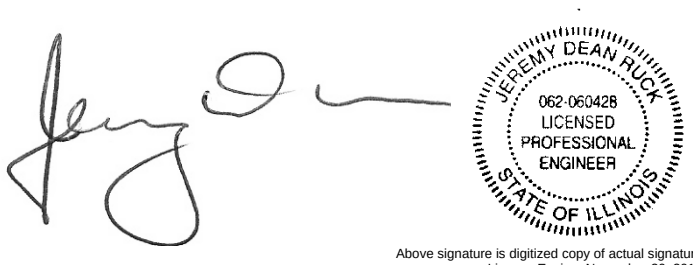
[1] The Facility ID for K29LK-D at Springfield, Missouri is 68046.

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 0.3 is 6.86 $\mu W/cm^2$. This value is less than the upper limit of the uncontrolled environment condition upper limit. Additionally, the contribution of K29LK-D to the aggregate power density at the site would not cause that level to exceed the upper limit of the uncontrolled environment of the Commission's safety standard. Midwest certifies 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.

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
December 11, 2018

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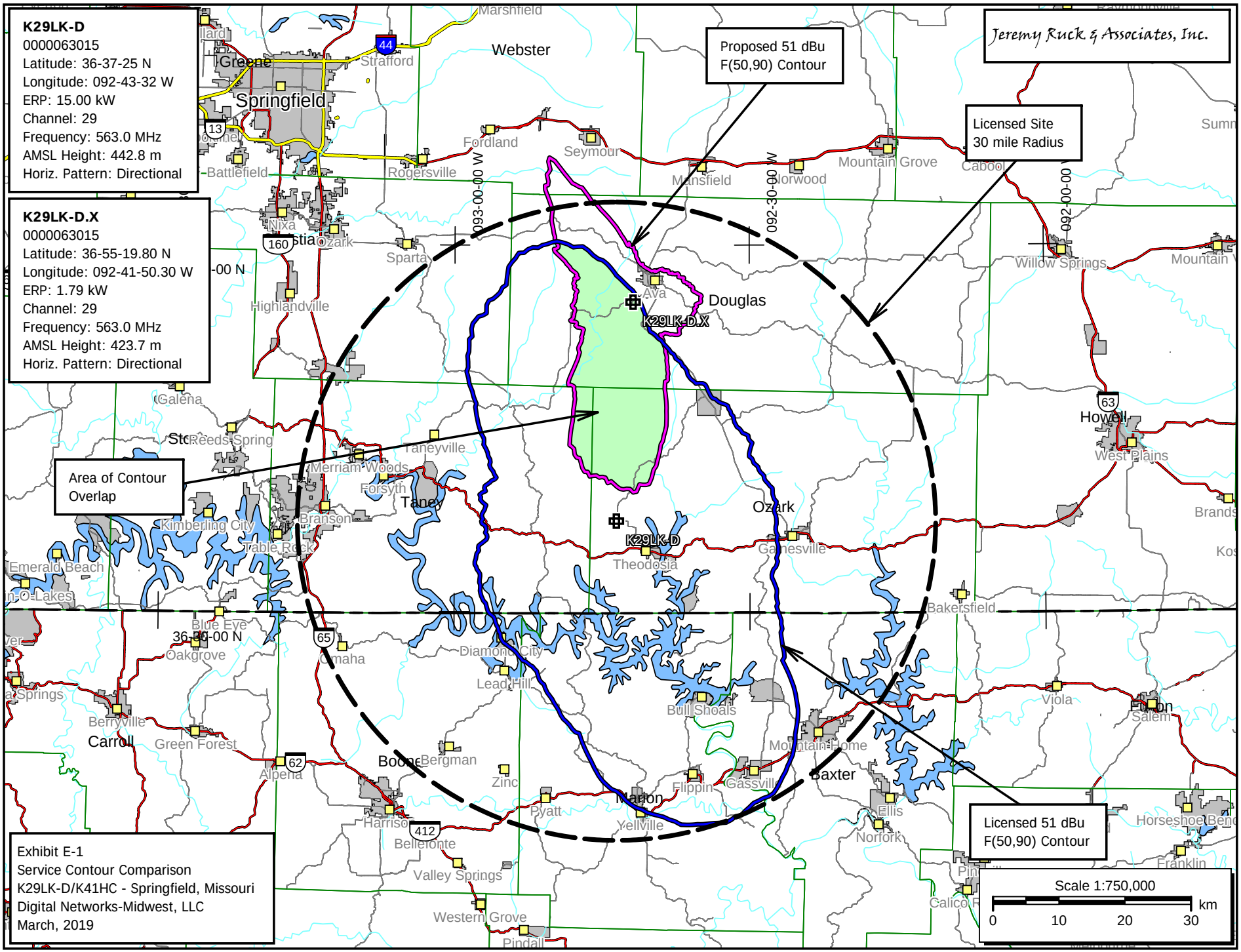
K29LK-D
0000063015
Latitude: 36-37-25 N
Longitude: 092-43-32 W
ERP: 15.00 kW
Channel: 29
Frequency: 563.0 MHz
AMSL Height: 442.8 m
Horiz. Pattern: Directional
K29LK-D.X
0000063015
Latitude: 36-55-19.80 N
Longitude: 092-41-50.30 W
ERP: 1.79 kW
Channel: 29
Frequency: 563.0 MHz
AMSL Height: 423.7 m
Horiz. Pattern: Directional
Jeremy Ruck & Associates, Inc.
Proposed 51 dBu F(50,90) Contour
Licensed Site 30 mile Radius
Area of Contour Overlap
Licensed 51 dBu F(50,90) Contour
K29LK-D.X
K29LK-D
Douglas
Ozark
Taney
Baxter
Springfield
Greene
Webster
Marshfield
Seymour
Mansfield
Mountain Grove
Willow Springs
Howell
West Plains
Rogersville
Fordland
Battlefield
Sparta
Ava
Highlandville
Galena
Reeds Spring
Taneyville
Merriam Woods
Forsyth
Branson
Kimberling City
Table Rock
Theodosia
Gainesville
Bakersfield
Emerald Beach
Blue Eye
Oakgrove
Omaha
Diamond City
Lead Hill
Bull Shoals
Viola
Salem
Berryville
Carroll
Green Forest
Alpena
Boone
Bergman
Zinc
Flippin
Gassville
Mountain Home
Harrison
Pyatt
Yellville
Ellis
Norfork
Bellefonte
Valley Springs
Western Grove
Pindall
Franklin
Horseshoe Bend
Calico Rock
Summ
Brands
Kos
Scale 1:750,000
0 10 20 30 km
Exhibit E-1
Service Contour Comparison
K29LK-D/K41HC - Springfield, Missouri
Digital Networks-Midwest, LLC
March, 2019

Exhibit E-2 - TVStudy Interference Study

Study created: 2019.03.06 14:50:23

Study build station data: LMS TV 2019-03-05

```
    Proposal: K29LK-D D29 LD LIC Springfield, MO
 File number: BLANK0000063015
 Facility ID: 68046
Station data: User record
   Record ID: 265
     Country: U.S.
        Zone: II
```

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	K21JS	N21	TX	LIC	HARRISON, AR	BLTTL20111121DXG	88.8 km
No	K28NT-D	D28z	LD	LIC	BENTONVILLE & ROGERS, AR	BLANK0000059138	159.3
No	KARZ-TV	D28	DT	CP	LITTLE ROCK, AR	BLANK0000062880	236.7
No	WRBU	D28	DT	CP	EAST ST. LOUIS, IL	BLANK0000034410	253.7
No	KJPX-LP	D28+	LD	CP	JOPLIN, MO	BLANK0000054317	150.9
No	KOZL-TV	D28	DT	LIC	SPRINGFIELD, MO	BLCDT20070213ABB	39.9
No	K29KW-D	D29	LD	CP	FORT SMITH, AR	BLANK0000008509	158.5
No	KZTE-LD	D29	LD	CP	FULTON, AR	BLANK0000054183	408.9
No	KWMO-LD	D29	LD	CP	HOT SPRINGS, AR	BLANK0000052513	236.8
No	KWOG	D29	DT	LIC	SPRINGDALE, AR	BLANK0000049027	164.7
No	W29ES-D	D29	LD	LIC	JACKSONVILLE, IL	BLANK0000062236	377.2
No	WLEH-LD	D29	LD	CP	MOUNT VERNON, IL	BLANK0000051658	294.5
No	W29CI-D	D29	DC	LIC	SALEM, IL	BLDTA20120913AAP	372.6
No	K29KL-D	D29	LD	CP	INDEPENDENCE, KS	BLANK0000030455	213.4
No	K15DD-D	D29	LD	CP	WICHITA, KS	BLANK0000053613	417.6
No	KMBC-TV	D29	DT	LIC	KANSAS CITY, MO	BLCDT20090618ACY	288.2
No	K29JF-D	D29	LD	LIC	ROLLA, MO	BLDTL20130222ADE	139.2
No	KTUZ-TV	D29	DT	LIC	SHAWNEE, OK	BLCDT20081105ACO	455.1
No	KTZT-CD	D29	DC	CP	TULSA, OK	BLANK0000036113	306.2
No	KTZT-CD	D29	DC	LIC	TULSA, OK	BLDTA20120430AEA	306.2
No	K29JY-D	D29	LD	CP	VIAN, OK	BNPDTL20100504ALZ	256.7
No	WKNO	D29	DT	LIC	MEMPHIS, TN	BLEDT20060627ABE	324.6
No	KKAF-LD	D30	LD	LIC	FAYETTEVILLE, AR	BLANK0000062918	158.5
No	KLRT-TV	D30	DT	LIC	LITTLE ROCK, AR	BLCDT20020507AAK	236.7
No	KCLJ-LP	D30	LD	CP	JOPLIN/CARTHAGE, MO	BDFCDTA20100813CAI	150.9
No	KCLJ-LP	N30z	TX	LIC	JOPLIN/CARTHAGE, MO	BLTTA20050506ACG	150.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

```
    Channel: D29
       Mask: Full Service
   Latitude:  36 55 19.80 N (NAD83)
  Longitude:  92 41 50.30 W
Height AMSL: 423.7 m
       HAAT: 58.9 m
   Peak ERP: 1.79 kW
    Antenna: Scala PR-TV Array 1@185 1@325 0.0 deg
Elev Pattrn: Generic
```

50.2 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.035 kW	40.8 m	8.8 km
45.0	0.012	42.3	6.9
90.0	0.014	95.3	10.7
135.0	0.013	42.0	7.0
180.0	1.59	79.9	29.8
225.0	0.033	86.3	12.5
270.0	0.018	63.6	9.4

315.0 1.12 21.0 18.2

Distance to Canadian border: 991.8 km

Distance to Mexican border: 1132.5 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 313.7 degrees Distance: 665.6 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 291.9 degrees Distance: 1144.7 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 BLANK0000063015 ----

Proposal receives 8.31% interference from scenario 1
No IX check failures found.

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