

APPLICATION FOR CONSTRUCTION PERMIT

KKTW-LD – MINNEAPOLIS, MINNESOTA
FACILITY ID: 68054

DIGITAL NETWORKS—MIDWEST, LLC

APRIL 2021

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 KKTW-LD at Minneapolis, Minnesota, and are in support of their application for construction permit to modify that facility.¹ This application seeks to modify the current license for the facility, which is under LMS File No. 000059790.

KKTW-LD is licensed to operate on television channel 19 with a maximum effective radiated power of 435 Watts at a center of radiation of 332.1 meters above mean sea level, 30 meters above ground level, using a directional antenna. The proposed facility would also operate on television channel 19, but with a maximum effective radiated power of 9.4 kW. The proposed center of radiation is 390 meters above mean sea level, or 87.9 meters above ground level. A Kathrein-Scala 75010210 3x2 array is proposed for use under this application. No change in the licensed site is proposed.

The map in Exhibit E-1 is a comparison between the licensed and proposed technical parameters, and illustrates the 51 dBu F(50,90) service contour for each set. Since no change in the site location is proposed under this application, there will be contour overlap between the licensed and proposed technical parameters.

Exhibit E-2 is the output from *TVStudy* for the licensed technical parameters. This study demonstrates that there is pre-existing interference to low power television station W19EN-D,

¹ The Facility ID for KKTW-LD at Minneapolis, Minnesota is 68054.

JEREMY RUCK & ASSOCIATES, INC.

P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
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formerly W47CO-D, at River Falls, Wisconsin.² As indicated in this study, that facility is predicted to receive 13.83% interference from the licensed technical parameters for KKTW-LD.

Exhibit E-3 is the output from *TVStudy* for the proposed technical parameters. A comparison between this exhibit and Exhibit E-2, indicates that the proposed technical parameters would reduce the level of interference received by W19EN-D. Both of these interference studies were created using a cell size of 1.0 km and a profile increment of 0.1 km. Since a reduction in the level of interference would be realized by a grant of this application, it is respectfully submitted that the proposed technical parameters under this application comply with Commission Rules.

The proposed facility is not located within the West Virginia quiet zone area and is located at a significant distance from the Grand Island, Nebraska FCC monitoring station. Additionally, 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 already existing environmental impact present from the tower.

In addition, the proposed facility would not result in human exposure at ground level to radiofrequency radiation in excess of the Commission's safety standards. 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 $3.83 \mu\text{W}/\text{cm}^2$. This value is below the upper limit of the uncontrolled environment condition. Midwest certifies it will coordinate with all other

² The Facility ID for W19EN-D/W47CO-D at River Falls, Wisconsin is 63054.

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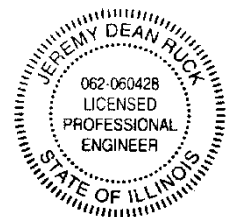
P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
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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 proposed facility complies with the provisions of Section 74.709 of the Commission's Rules. No land mobile protection issues have been identified based on the tables in that section of the rules, or on the output of *TVStudy*. The proposed facility also complies with Sections 74.793(e)-(h) and 74.793(h) of the Commission's Rules.

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, 2021

Jeremy D. Ruck, PE
April 6, 2021

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P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520

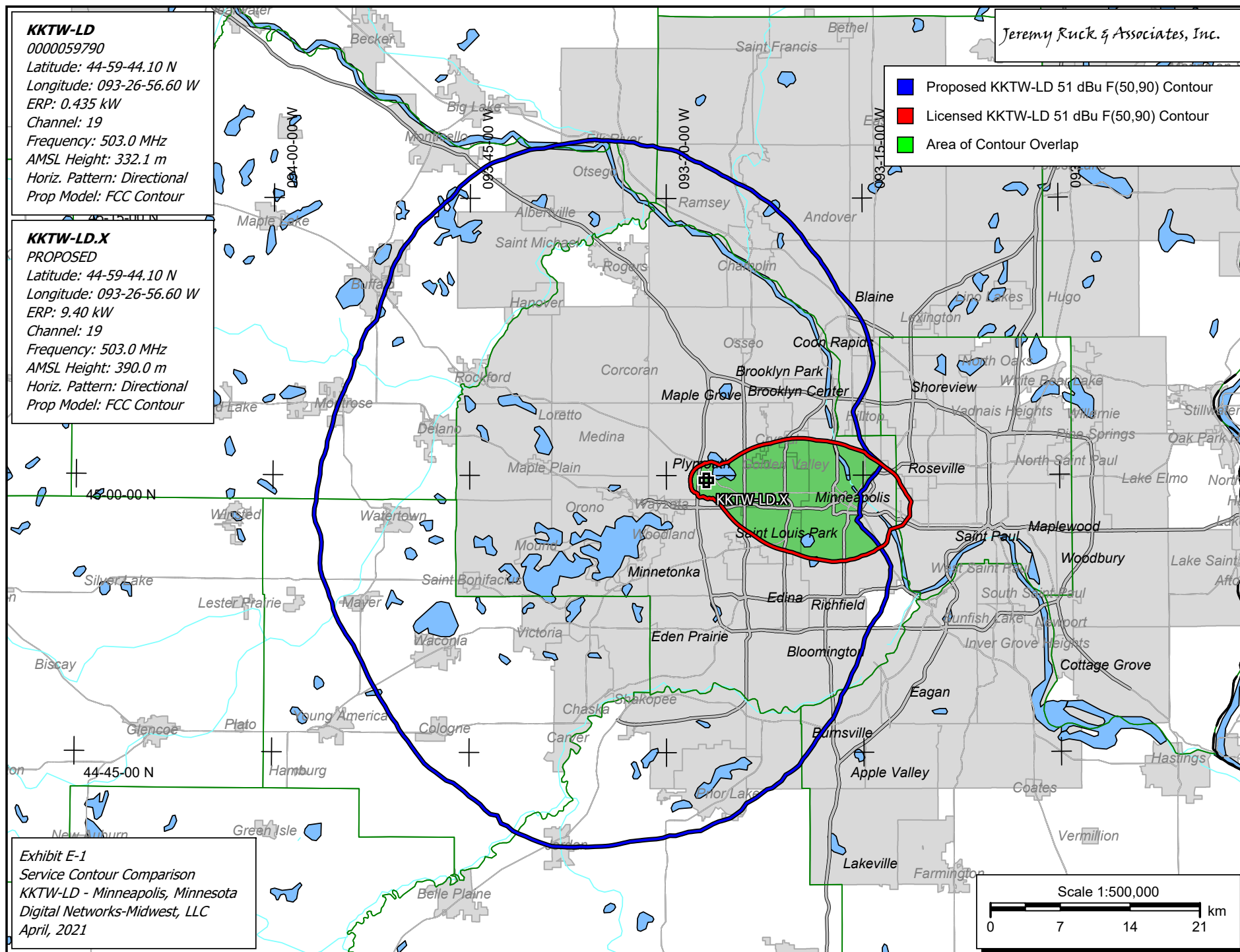
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Fax: 855.332.9537
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Prop Model: FCC Contour

Prop. Model: FCC Contour

■ Proposed KKTW-LD 51 dBu F(50,90) Contour
■ Licensed KKTW-LD 51 dBu F(50,90) Contour
■ Area of Contour Overlap



April, 2021

Exhibit E-2 - TVStudy Interference Study

tvstudy v2.2.5 (4uoc83)

Database: 127.0.0.1, Study: KKTW-LD Baseline Study Based on FCC Database Parameters LMS 000059790, Model: Longley-Rice
Start: 2021.04.06 08:54:20

Study created: 2021.04.06 08:54:20

Study build station data: LMS TV 2021-04-06

Proposal: KKTW-LD D19 LD LIC Minneapolis, MN
File number: BLANK0000059790
Facility ID: 68054
Station data: User record
Record ID: 301
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	KYIN	D18	DT	LIC	MASON CITY, IA	BLEDT20090612AHJ	179.0 km
No	KQDS-TV	D18	DT	LIC	DULUTH, MN	BLANK0000120640	224.8
No	K18GF-D	D18	LD	LIC	LITTLE FALLS, MN	BLDTL20120523ADD	128.9
No	KHVM-LD	D18	LD	CP	MINNEAPOLIS, MN	BLANK0000052068	22.9
No	K18IR-D	D18	LD	LIC	OLIVIA, MN	BLDTT20120213ABO	115.2
No	K18NE-D	D18	LD	LIC	ST. JAMES, MN	BLANK0000088224	134.3
No	WBOO-LP	D18	LD	CP	ELK MOUND, WI	BDISDTT20091223AMF	156.1
No	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	352.1
No	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	352.1
No	K19MS-D	D19	LD	CP	ALEXANDRA, MN	BLANK0000072314	185.4
No	K49JG-D	D19	LD	LIC	FROST, MN	BLANK0000062830	161.3
No	K19LX-D	D19	LD	LIC	GRANITE FALLS, MN	BLANK0000063065	169.1
No	K19HZ-D	D19	LD	LIC	JACKSON, MN	BLDTT20090910AAS	197.5
No	K19KB-D	D19	LD	CP	OAKLAND, MN	BNPDTL20100510AJX	151.3
No	K19CV-D	D19	LD	LIC	REDWOOD FALLS, MN	BLDTT20120604AAX	129.6
No	K19IT-D	D19	LD	CP	ST CHARLES, MN	BNPDTL20090825BXQ	167.0
No	K19LI-D	D19	LD	LIC	ST. JAMES, MN	BLANK0000064438	134.3
No	K19IH-D	D19	LD	LIC	WILLMAR, MN	BLDTT20100122ACJ	126.6
No	KVRR	D19	DT	LIC	FARGO, ND	BLCDT20090820ABE	284.8
No	KXNE-TV	D19	DT	CP	NORFOLK, NE	BLANK0000035898	434.6
No	KXNE-TV	D19	DT	LIC	NORFOLK, NE	BLEDT20090615ADS	434.6
No	K19KH-D	D19	LD	CP	WATERTOWN, SD	BNPDTL20100505AEC	283.4
No	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	315.3
No	W19DJ-D	D19	LD	CP	EAU CLAIRE, WI	BNPDTL20090825AYI	160.7
No	W19DP-D	D19	LD	CP	LA CROSS, WI	BNPDTL20100422ABU	195.1
No	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	383.3
Yes	W47CO-D	D19	LD	LIC	RIVER FALLS, WI	BLANK0000060427	60.5
No	KBJR-TV	D19	DT	LIC	SUPERIOR, WI	BLANK0000006392	224.5
No	KSMQ-TV	D20	DT	LIC	AUSTIN, MN	BLEDT20081223AAK	167.3
No	K20NH-D	D20	LD	LIC	BRAINERD, MN	BLANK0000068736	157.6
No	KMBD-LD	D20	LD	LIC	MINNEAPOLIS, MN	BLANK0000121916	14.0
No	K20JY-D	D20	LD	LIC	OLIVIA, MN	BLDTT20120213ABM	115.2
No	K20KW-D	D20	LD	CP	SAINT CLOUD, MN	BLANK0000013930	114.4
No	K20LP-D	D20	LD	LIC	ST. JAMES, MN	BLDTL20120625AAR	134.3

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D19
Mask: Full Service
Latitude: 44 59 44.10 N (NAD83)
Longitude: 93 26 56.60 W
Height AMSL: 332.1 m
HAAT: 0.0 m
Peak ERP: 0.435 kW

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Canton, IL 61520

Tel: 309.647.1200
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Exhibit E-2 - TVStudy Interference Study

Antenna: SAM-SAM-460 (ID 1004146) 100.0 deg
Elev Pattn: Generic

49.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.000 kW	45.5 m	1.9 km
45.0	0.000	61.2	2.7
90.0	0.345	67.2	21.4
135.0	0.027	56.2	10.4
180.0	0.000	48.8	2.0
225.0	0.000	44.2	1.9
270.0	0.000	29.5	1.5
315.0	0.000	28.4	1.5

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 48 m

Distance to Canadian border: 367.8 km

Distance to Mexican border: 1829.9 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 223.5 degrees Distance: 607.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 244.9 degrees Distance: 1102.4 km

No land mobile station failures found

Study cell size: 1.00 km
Profile point spacing: 0.10 km

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

Interference to BLANK0000060427 LIC scenario 1
**IX: 13.83% interference caused

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance	
	W47CO-D	D19	LD	LIC	RIVER FALLS, WI	BLANK0000060427		
Undesireds:	KKTW-LD	N19-	TX	LIC	Minneapolis, MN	BLTTL19870921IE	138.6 km	
	KKTW-LD	D19	LD	LIC	Minneapolis, MN	BLANK0000059790	60.5	
	KBJR-TV	D19	DT	LIC	SUPERIOR, WI	BLANK000006392	214.4	
Service area					Terrain-limited	IX-free, before	IX-free, after	Percent New IX
4081.3	698,059	3968.9		681,534	3949.7	676,610	3901.1 583,060	1.23 13.83
Undesired				Total IX	Unique IX, before	Unique IX, after		
KKTW-LD N19- TX LIC		0.0		0	0.0	0		
KKTW-LD D19 LD LIC		48.7		93,550		48.7	93,550	
KBJR-TV D19 DT LIC		19.1		4,924	19.1	4,924	19.1	4,924

Interference to proposal scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KKTW-LD	D19	LD	LIC	Minneapolis, MN	BLANK0000059790	
Undesireds:	KHVM-LD	D18	LD	CP	MINNEAPOLIS, MN	BLANK0000052068	22.9 km
	W47CO-D	D19	LD	LIC	RIVER FALLS, WI	BLANK0000060427	60.5
	KBJR-TV	D19	DT	LIC	SUPERIOR, WI	BLANK000006392	224.5
	KMBD-LD	D20	LD	LIC	MINNEAPOLIS, MN	BLANK0000121916	14.0
Service area				Terrain-limited	IX-free	Percent IX	

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Exhibit E-2 - TVStudy Interference Study

228.2	442,366	228.2	442,366	222.1	437,158	2.67	1.18
Undesired		Total IX		Unique IX		Prct Unique IX	
KHVM-LD D18 LD CP	1.0	548	1.0	548	0.44	0.12	
W47CO-D D19 LD LIC	2.0	1,462	2.0	1,462	0.89	0.33	
KBJR-TV D19 DT LIC	1.0	244	1.0	244	0.44	0.06	
KMBD-LD D20 LD LIC	2.0	2,954	2.0	2,954	0.89	0.67	

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Exhibit E-3 - TVStudy Interference Study

tvstudy v2.2.5 (4uoc83)

Database: 127.0.0.1, Study: KKTW CH 19 ASRN 1027973 390 m AMSL 9.4 kW ERP KAT 75010210 3x2 @265, Model:
Longley-Rice
Start: 2021.04.06 11:30:21

Study created: 2021.04.06 11:30:21

Study build station data: LMS TV 2021-04-06

Proposal: KKTW-LD D19 LD LIC Minneapolis, MN
File number: BLANK0000059790
Facility ID: 68054
Station data: User record
Record ID: 311
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	KYIN	D18	DT	LIC	MASON CITY, IA	BLEDT20090612AHJ	179.0 km
No	KQDS-TV	D18	DT	LIC	DULUTH, MN	BLANK0000120640	224.8
No	K18GF-D	D18	LD	LIC	LITTLE FALLS, MN	BLDTL20120523ADD	128.9
Yes	KHVM-LD	D18	LD	CP	MINNEAPOLIS, MN	BLANK0000052068	22.9
No	K18IR-D	D18	LD	LIC	OLIVIA, MN	BLDTT20120213ABO	115.2
No	K18NE-D	D18	LD	LIC	ST. JAMES, MN	BLANK0000088224	134.3
No	WBOO-LP	D18	LD	CP	ELK MOUND, WI	BDISDTT20091223AMF	156.1
No	KDMI	D19	DT	LIC	DES MOINES, IA	BLCDT20120627AAE	352.1
No	KDMI	D19	DT	APP	DES MOINES, IA	BPCDT20130205AAM	352.1
No	K19MS-D	D19	LD	CP	ALEXANDRA, MN	BLANK0000072314	185.4
No	K49JG-D	D19	LD	LIC	FROST, MN	BLANK0000062830	161.3
No	K19LX-D	D19	LD	LIC	GRANITE FALLS, MN	BLANK0000063065	169.1
No	K19HZ-D	D19	LD	LIC	JACKSON, MN	BLDTT20090910AAS	197.5
No	K19KB-D	D19	LD	CP	OAKLAND, MN	BNPDTL20100510AJX	151.3
No	K19CV-D	D19	LD	LIC	REDWOOD FALLS, MN	BLDTT20120604AAX	129.6
No	K19IT-D	D19	LD	CP	ST CHARLES, MN	BNPDTL20090825BXQ	167.0
No	K19LI-D	D19	LD	LIC	ST. JAMES, MN	BLANK0000064438	134.3
No	K19IH-D	D19	LD	LIC	WILLMAR, MN	BLDTT20100122ACJ	126.6
No	KVRR	D19	DT	LIC	FARGO, ND	BLCDT20090820ABE	284.8
No	KXNE-TV	D19	DT	CP	NORFOLK, NE	BLANK0000035898	434.6
No	KXNE-TV	D19	DT	LIC	NORFOLK, NE	BLEDT20090615ADS	434.6
No	K19KH-D	D19	LD	CP	WATERTOWN, SD	BNPDTL20100505AEC	283.4
No	WTPX-TV	D19	DT	LIC	ANTIGO, WI	BLANK0000054113	315.3
No	W19DJ-D	D19	LD	CP	EAU CLAIRE, WI	BNPDTL20090825AYI	160.7
No	W19DP-D	D19	LD	CP	LA CROSS, WI	BNPDTL20100422ABU	195.1
No	WMTV	D19	DT	LIC	MADISON, WI	BLCDT20100413AAW	383.3
Yes	W47CO-D	D19	LD	LIC	RIVER FALLS, WI	BLANK0000060427	60.5
No	KBJR-TV	D19	DT	LIC	SUPERIOR, WI	BLANK0000006392	224.5
No	KSMQ-TV	D20	DT	LIC	AUSTIN, MN	BLEDT20081223AAK	167.3
No	K20NH-D	D20	LD	LIC	BRAINERD, MN	BLANK0000068736	157.6
No	KMBD-LD	D20	LD	LIC	MINNEAPOLIS, MN	BLANK0000121916	14.0
No	K20JY-D	D20	LD	LIC	OLIVIA, MN	BLDTT20120213ABM	115.2
No	K20KW-D	D20	LD	CP	SAINT CLOUD, MN	BLANK0000013930	114.4
No	K20LP-D	D20	LD	LIC	ST. JAMES, MN	BLDTL20120625AAR	134.3

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D19
Mask: Full Service
Latitude: 44 59 44.10 N (NAD83)
Longitude: 93 26 56.60 W
Height AMSL: 390.0 m
HAAT: 105.5 m
Peak ERP: 9.40 kW

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P.O. Box 415
Canton, IL 61520

Tel: 309.647.1200
Fax: 855.332.9537
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Exhibit E-3 - TVStudy Interference Study

Antenna: KAT 75010210 3x2 265.0 deg
Elev Pattn: Generic

49.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1.50 kW	103.4 m	33.6 km
45.0	0.200	119.1	24.5
90.0	0.057	125.1	18.3
135.0	0.223	114.1	24.6
180.0	2.61	106.7	36.7
225.0	7.96	102.1	41.8
270.0	8.94	87.4	40.6
315.0	8.22	86.3	40.0

Distance to Canadian border: 367.8 km

Distance to Mexican border: 1829.9 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 223.5 degrees Distance: 607.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 244.9 degrees Distance: 1102.4 km

No land mobile station failures found

Study cell size: 1.00 km
Profile point spacing: 0.10 km

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

Interference to BLANK0000052068 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KHVM-LD	D18	LD	CP	MINNEAPOLIS, MN	BLANK0000052068	
Undesireds:	KKTW-LD	N19-	TX	LIC	Minneapolis, MN	BLTTL19870921IE	96.4 km
	KKTW-LD	D19	LD	LIC	Minneapolis, MN	BLANK0000059790	22.9
	KYIN	D18	DT	LIC	MASON CITY, IA	BLEDT20090612AHJ	180.9
	KQDS-TV	D18	DT	LIC	DULUTH, MN	BLANK0000120640	208.5
	WBOO-LP	D18	LD	CP	ELK MOUND, WI	BDISDTT20091223AMF	136.2
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
3485.3		2,331,930		3466.1 2,324,673		3424.6 2,307,512	0.53 0.12

Undesired	Total IX	Unique IX, before	Unique IX, after
KKTW-LD N19- TX LIC	0.0	0	0
KKTW-LD D19 LD LIC	18.3	2,695	18.3 2,695
KYIN D18 DT LIC	6.1	4,035	4.0 2,593
KQDS-TV D18 DT LIC	19.2	11,873	16.1 10,397
WBOO-LP D18 LD CP	1.0	34	0.0 0

Interference to BLANK0000060427 LIC scenario 1
**IX: 13.62% interference caused

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	W47CO-D	D19	LD	LIC	RIVER FALLS, WI	BLANK0000060427	
Undesireds:	KKTW-LD	N19-	TX	LIC	Minneapolis, MN	BLTTL19870921IE	138.6 km
	KKTW-LD	D19	LD	LIC	Minneapolis, MN	BLANK0000059790	60.5
	KBJR-TV	D19	DT	LIC	SUPERIOR, WI	BLANK000006392	214.4
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX

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Fax: 855.332.9537
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Exhibit E-3 - TVStudy Interference Study

4081.3	698,059	3968.9	681,534	3949.7	676,610	3867.7	584,469	2.08	13.62
Undesired		Total IX		Unique IX, before		Unique IX, after			
KKTW-LD N19- TX LIC	0.0	0	0.0	0					
KKTW-LD D19 LD LIC	82.0	92,141				82.0	92,141		
KBJR-TV D19 DT LIC	19.1	4,924	19.1	4,924		19.1	4,924		

Interference to proposal scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KKTW-LD	D19	LD	LIC	Minneapolis, MN	BLANK0000059790	
Undesireds:	KBJR-TV	D19	DT	LIC	SUPERIOR, WI	BLANK0000006392	224.5 km
	KMBD-LD	D20	LD	LIC	MINNEAPOLIS, MN	BLANK0000121916	14.0

	Service area	Terrain-limited	IX-free	Percent IX
	3512.2 1,595,791	3512.2 1,595,791	3503.2 1,589,294	0.26 0.41

	Total IX	Unique IX	Prcnt Unique IX
Undesired			
KBJR-TV D19 DT LIC	5.0 1,001	4.0 577	0.11 0.04
KMBD-LD D20 LD LIC	5.0 5,920	4.0 5,496	0.11 0.34

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