TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT
FOR DIGITAL COMPANION CHANNEL

CLASS A TELEVISION STATION KDAO-LP
MARSHALLTOWN, IOWA
FACILITY ID: 46753
CHANNEL 44-D / 1.38 KW ERP / ND

MTN BROADCASTING, INC.

MARCH, 2015

JEREMY RUCK & ASSOCIATES, INC.
P.O. Box 415
221 S. 1st Avenue
Canton, IL 61520
Tel: 309.647.1200
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APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **MTN Broadcasting, Inc.** ("MTN"), licensee of class A television station KDAO-LP at Marshalltown, Iowa, and are in support of their application for construction permit for a new digital companion channel facility.[1]

The proposed digital facility would operate on channel 44 with a maximum effective radiated power of 1.38 kW combined into the existing non-directional antenna utilized for the KDAO-LP operation. The antenna is located at 59.6 meters above ground level, with the center of radiation at 322.6 meters above mean sea level.[2]

The antenna to be utilized by the facility is a Bogner B4UO. This antenna has a manufacturer specified power gain of 4.7, or 6.7 dBd. Ahead of the antenna is 335 feet of Andrew LDF6-50 semi-flexible foam-dielectric cable with a nominal diameter of 1 1/4". At channel 44, the efficiency of this run of transmission line is 58.55 percent. The proposed transmitter power output is 500 Watts, which results in an effective radiated power of 1.38 kW.

The proposed facility would comply with all of the applicable rule sections. Exhibits E-1A and E-1B demonstrate that a small region of interference to the licensed analog operation of K44FK at Waterloo, Iowa is predicted.[3] This resident population of this region is 0.07 percent of the translator service area population. This level of predicted interference complies with the

[1] The Facility ID for KDAO-LP at Marshalltown, Iowa is 46753.
[2] The change in the center of radiation above mean sea level from that on file with the analog class A facility is due to more accurate site elevation data.
[3] The Facility ID of K44FK at Waterloo, Iowa is 67879.

Commission's Rules. Exhibit E-2 provides a population tabulation for the study, which was performed with a cell size of 0.5 kilometers and a profile spacing of 0.1 kilometers.

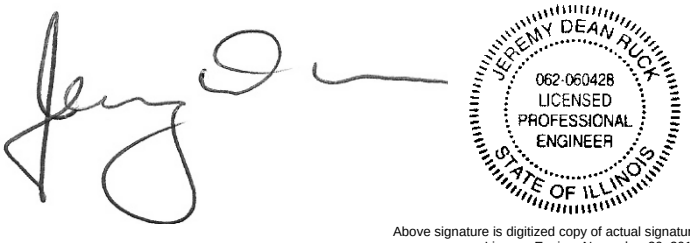
The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The facility would continue to utilize the existing tower.[4] The proposed companion channel operation would require modification of components within the transmitter building, and no actual outside construction or excavation.

Additionally, the proposed facility would not constitute a radiofrequency radiation exposure hazard to persons at the site. Under a worst-case scenario, one where the antenna radiates uniformly in all directions, the calculated power density at two meters above ground is 13.9 $\mu W/cm^2$. This value is 3.2 percent of the upper limit permissible under the uncontrolled environment condition, and thus excludes the facility.

MTN 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 activities will include, but are not necessarily limited to, a reduction in transmitter power, or cessation of operation.

[4] The existing tower does not require registration per findings from *TOWAIR*.

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
March 17, 2015

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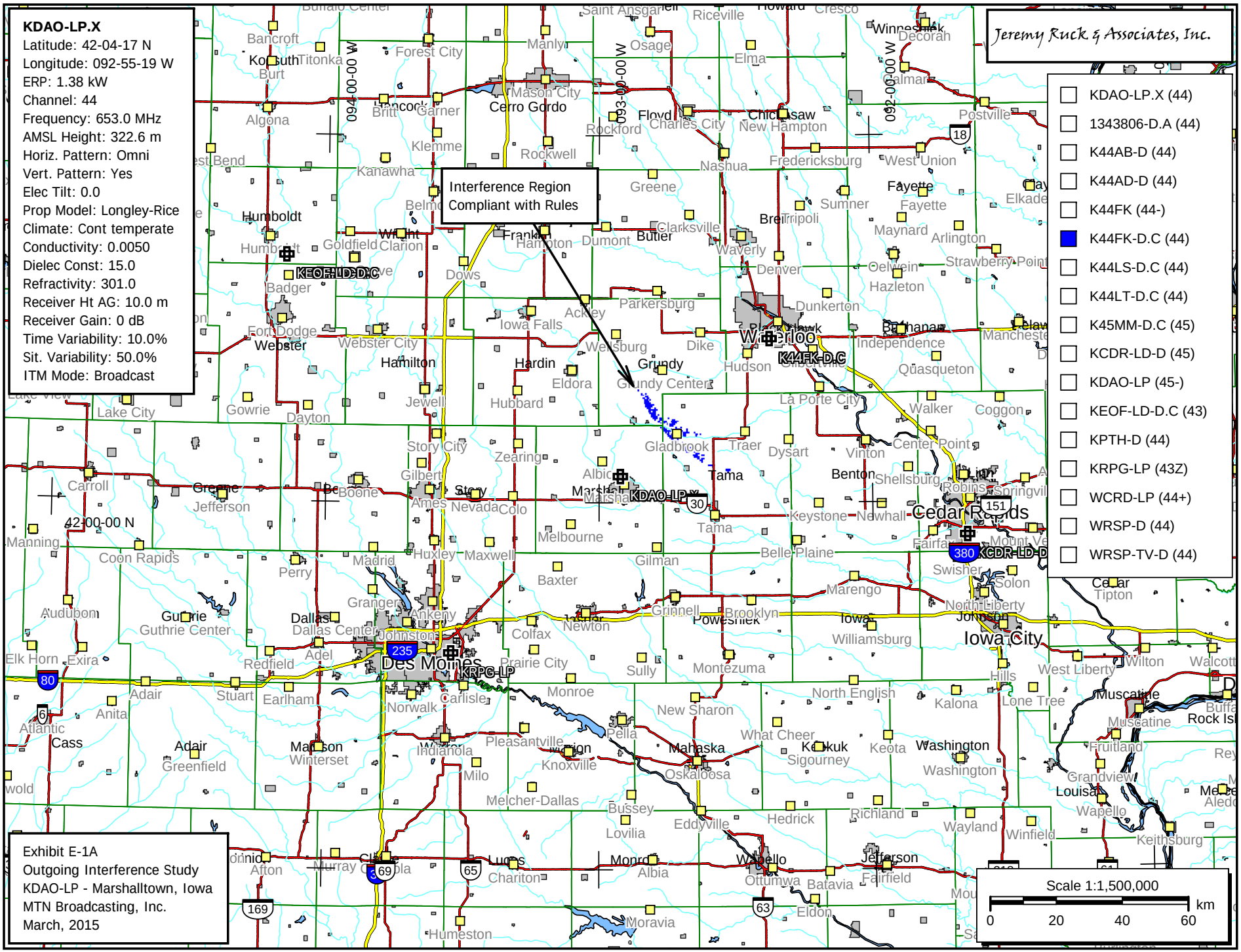
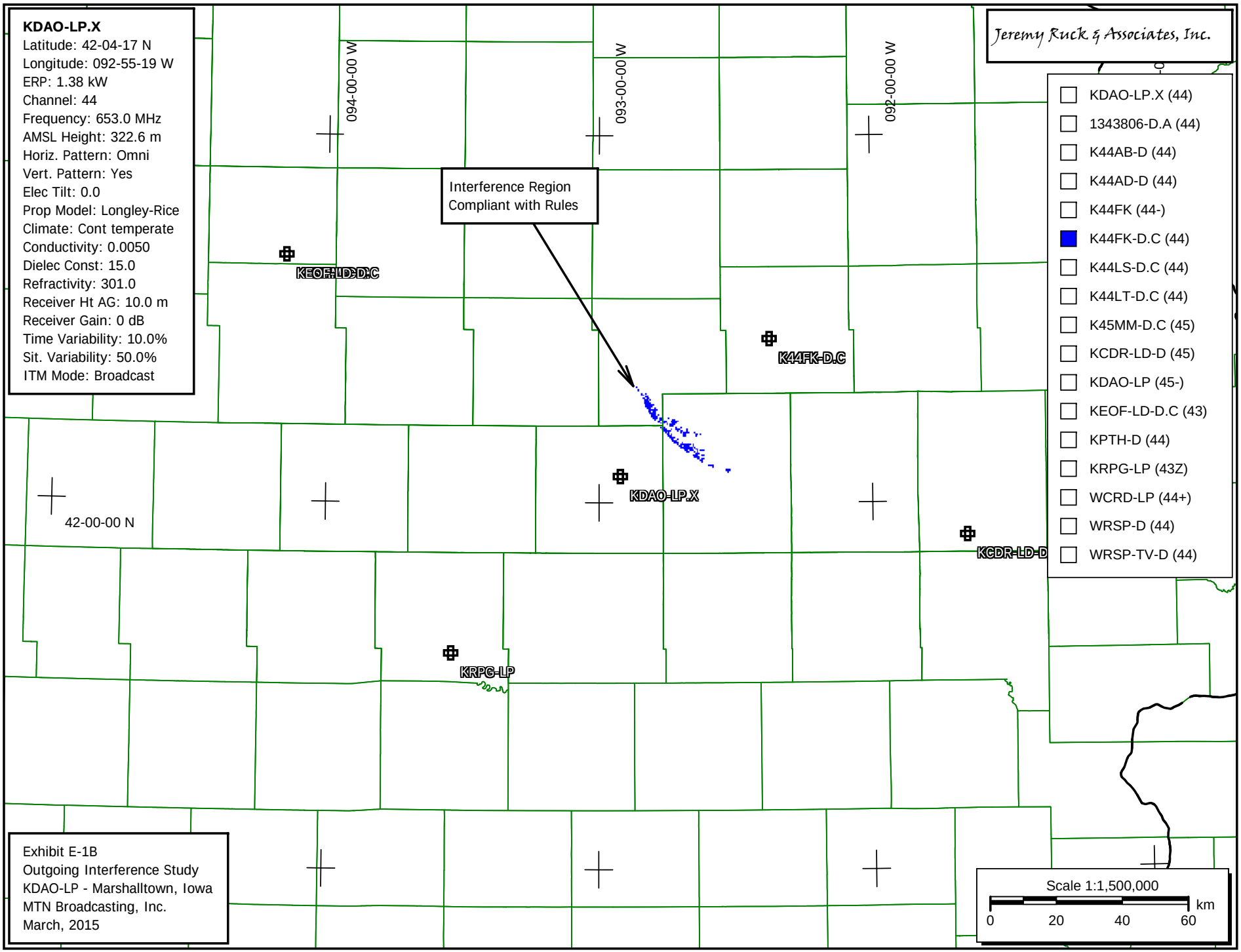

KDAO-LP.X
Latitude: 42-04-17 N
Longitude: 092-55-19 W
ERP: 1.38 kW
Channel: 44
Frequency: 653.0 MHz
AMSL Height: 322.6 m
Horiz. Pattern: Omni
Vert. Pattern: Yes
Elec Tilt: 0.0
Prop Model: Longley-Rice
Climate: Cont temperate
Conductivity: 0.0050
Dielec Const: 15.0
Refractivity: 301.0
Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 10.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
Jeremy Ruck & Associates, Inc.
Interference Region
Compliant with Rules
KDAO-LP.X (44)
1343806-D.A (44)
K44AB-D (44)
K44AD-D (44)
K44FK (44-)
K44FK-D.C (44)
K44LS-D.C (44)
K44LT-D.C (44)
K45MM-D.C (45)
KCDR-LD-D (45)
KDAO-LP (45-)
KEOF-LD-D.C (43)
KPTH-D (44)
KRPG-LP (43Z)
WCRD-LP (44+)
WRSP-D (44)
WRSP-TV-D (44)
094-00-00 W
093-00-00 W
092-00-00 W
42-00-00 N
KEOF-LD-D.C
K44FK-D.C
KDAO-LP.X
KRPG-LP
KCDR-LD-D
Waterloo
Cedar Rapids
Iowa City
Des Moines
Marshalltown
Ames
Fort Dodge
Webster City
Hamilton
Hardin
Grundy
Tama
Benton
Jasper
Polk
Dallas
Guthrie
Adair
Cass
Madison
Warren
Marion
Mahaska
Keokuk
Washington
Johnson
Linn
Jones
Scale 1:1,500,000
0 20 40 60 km
Exhibit E-1A
Outgoing Interference Study
KDAO-LP - Marshalltown, Iowa
MTN Broadcasting, Inc.
March, 2015


KDAO-LP.X
Latitude: 42-04-17 N
Longitude: 092-55-19 W
ERP: 1.38 kW
Channel: 44
Frequency: 653.0 MHz
AMSL Height: 322.6 m
Horiz. Pattern: Omni
Vert. Pattern: Yes
Elec Tilt: 0.0
Prop Model: Longley-Rice
Climate: Cont temperate
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Receiver Ht AG: 10.0 m
Receiver Gain: 0 dB
Time Variability: 10.0%
Sit. Variability: 50.0%
ITM Mode: Broadcast
Jeremy Ruck & Associates, Inc.
094-00-00 W
093-00-00 W
092-00-00 W
42-00-00 N
Interference Region
Compliant with Rules
KEOF-LD-D.C
K44FK-D.C
KDAO-LP.X
KCDR-LD-D
KRPG-LP
KDAO-LP.X (44)
1343806-D.A (44)
K44AB-D (44)
K44AD-D (44)
K44FK (44-)
K44FK-D.C (44)
K44LS-D.C (44)
K44LT-D.C (44)
K45MM-D.C (45)
KCDR-LD-D (45)
KDAO-LP (45-)
KEOF-LD-D.C (43)
KPTH-D (44)
KRPG-LP (43Z)
WCRD-LP (44+)
WRSP-D (44)
WRSP-TV-D (44)
Exhibit E-1B
Outgoing Interference Study
KDAO-LP - Marshalltown, Iowa
MTN Broadcasting, Inc.
March, 2015
Scale 1:1,500,000
0
20
40
60
km

Exhibit E-2
Outgoing Interference Population Report

KDAO-LP.X (44) Marshalltown, IA - BLTTL20001020ABU
Broadcast Type: Digital Service: F [Stringent Emission Mask]
Lat: 42-04-17 N Lng: 092-55-19 W ERP: 1.38 kW AMSL: 322.6 m
TV Outgoing Interference Study
Signal Resolution: 0.5 km
Consider NTSC Taboo: Yes
KWX error points are considered to
     be interference free coverage.
Default # of radials computed for contours: 360
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 0.1 km
Masked interference points are being
     counted as interference.
Using LPTV/translator D/U rules.
Pop Centroid DB: 2010 US Census (PL)

Study Date: 3/17/2015
TV Database Date: 3/16/2015

Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

Population Database: 2010 US Census (PL)

Stations Considered:

Call Letters	City	State	Dist	Azi
1343806-D.A (44)	Rockford	IL	312.3	91.0
K44AB-D (44)	Keokuk	IA	224.0	144.9
K44AD-D (44)	St. James	MN	264.0	329.5
K44FK (44-)	Waterloo	IA	61.4	47.2
K44FK-D.C (44)	Waterloo	IA	61.4	47.2
K44LS-D.C (44)	Brewster	MN	268.0	311.4
K44LT-D.C (44)	Albert Leo	MN	184.3	347.5
K45MM-D.C (45)	Fort Dodge	IA	121.4	303.7
KCDR-LD-D (45)	Cedar Rapids	IA	106.5	99.3
KDAO-LP (45-)	Marshalltown	IA	0.0	0.0
KEOF-LD-D.C (43)	Fort Dodge	IA	121.4	303.7
KPTH-D (44)	SIOUX CITY	IA	277.9	283.0
KRPG-LP (43Z)	Des Moines	IA	74.1	223.9
WCRD-LP (44+)	Carthage	IL	308.0	90.3
WRSP-D (44)	SPRINGFIELD	IL	386.4	129.6
WRSP-TV-D (44)	Springfield	IL	386.4	129.6

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
1343806-D.A (44)	0.0	0	120,058	0	0	0.00

K44AB-D (44)	0.0	0	56,801	0	0	0.00
K44AD-D (44)	0.0	0	63,262	0	0	0.00
K44FK (44-)	0.0	0	120,968	0	0	0.00
K44FK-D.C (44)	52.1	60	198,795	0	146	0.07
K44LS-D.C (44)	0.0	0	15,425	0	0	0.00
K44LT-D.C (44)	0.0	0	26,652	0	0	0.00
K45MM-D.C (45)	0.0	0	83,870	0	0	0.00
KCDR-LD-D (45)	0.0	0	373,589	0	0	0.00
KDAO-LP (45-)	0.0	0	25,826	0	0	0.00
KEOF-LD-D.C (43)	0.0	0	84,413	0	0	0.00
KPTH-D (44)	0.0	0	585,163	0	0	0.00
KRPG-LP (43Z)	0.0	0	486,771	0	0	0.00
WCRD-LP (44+)	0.0	0	12,353	0	0	0.00
WRSP-D (44)	0.0	0	897,282	0	0	0.00
WRSP-TV-D (44)	0.0	0	899,574	0	0	0.00

	Housing Units	Population
Iowa		
Grundy County		
Total	5,530	12,453
K44FK-D.C (44)	10	28
Marshall County		
Total	16,831	40,648
K44FK-D.C (44)	2	4
Tama County		
Total	7,766	17,767
K44FK-D.C (44)	48	114