

ENGINEERING EXHIBIT

Displacement Application of Licensed Digital Low Power Television Station

prepared for

Gray Television Licensee, LLC

KMNF-LD Mankato, MN

Facility ID 183814

Ch. 8 3 kW Nondirectional

Gray Television Licensee, LLC (“Gray”) is the licensee of digital Low Power Television station KMNF-LD, Channel 7, Mankato MN, Facility ID 183814. KMNF-LD is licensed (file# 0000090446) to operate with 3 kW effective radiated power (“ERP”), nondirectional. The licensed Channel 7 facility is displaced by a new full-service television station that has recently commenced operation. *Gray* herein seeks a displacement Construction Permit (“CP”) to change to Channel 8 while continuing to utilize the licensed transmitting location and nondirectional ERP, with a slight reduction in antenna height.

The licensed Channel 7 facility is displaced due to predicted interference caused to KONC (Facility ID 776087, Alexandria MN, 181 km distant). KONC arose from FCC Auction 112 and is now licensed (file# 0000220950). Table 1 supplies an interference analysis summary regarding KONC, showing that KMNF-LD causes 3.64 percent predicted interference to KONC.

As with the licensed Channel 7 operation, the proposed KMNF-LD Channel 8 facility will employ a side-mounted antenna on the tower structure associated with FCC Antenna Structure Registration number 1025277. The proposed Channel 8 antenna’s center of radiation will be 293.5 meters above ground level, a 2.8 meter reduction from the licensed height. No change to the overall structure height will result.

The proposed antenna is a Dielectric model TLS-V4 having elliptical polarization. The nondirectional ERP is 3 kW horizontally polarized and 0.9 kW vertically polarized using a “full service” out of channel emission mask. Figure 1 depicts the coverage contour of the proposed

facility and that of the licensed facility, demonstrating compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69¹ shows that the proposal complies with the FCC's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in Table 2, show that any new interference does not exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed facility was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10) and 20 percent antenna relative field in downward elevations (pattern data shows 20 percent or less relative field at angles 30 to 90 degrees below the antenna), the calculated power density attributable to the proposed facility at locations near the transmitter site at a height of two meters above ground level is $0.06 \mu\text{W}/\text{cm}^2$, which is 0.03 percent of the general population / uncontrolled maximum permissible exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines. This

¹FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 1 km cell size, and 1.0 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

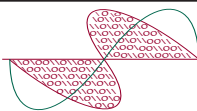
exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

List of Attachments

Figure 1	Coverage Contour Comparison
Table 1	Ch. 7 TVStudy Displacement Summary
Table 2	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections of FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

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Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Coverage Contour Comparison
KMNF-LD Mankato, MN
Facility ID 183814
Ch. 8 3 kW Nondirectional

prepared for
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December, 2023

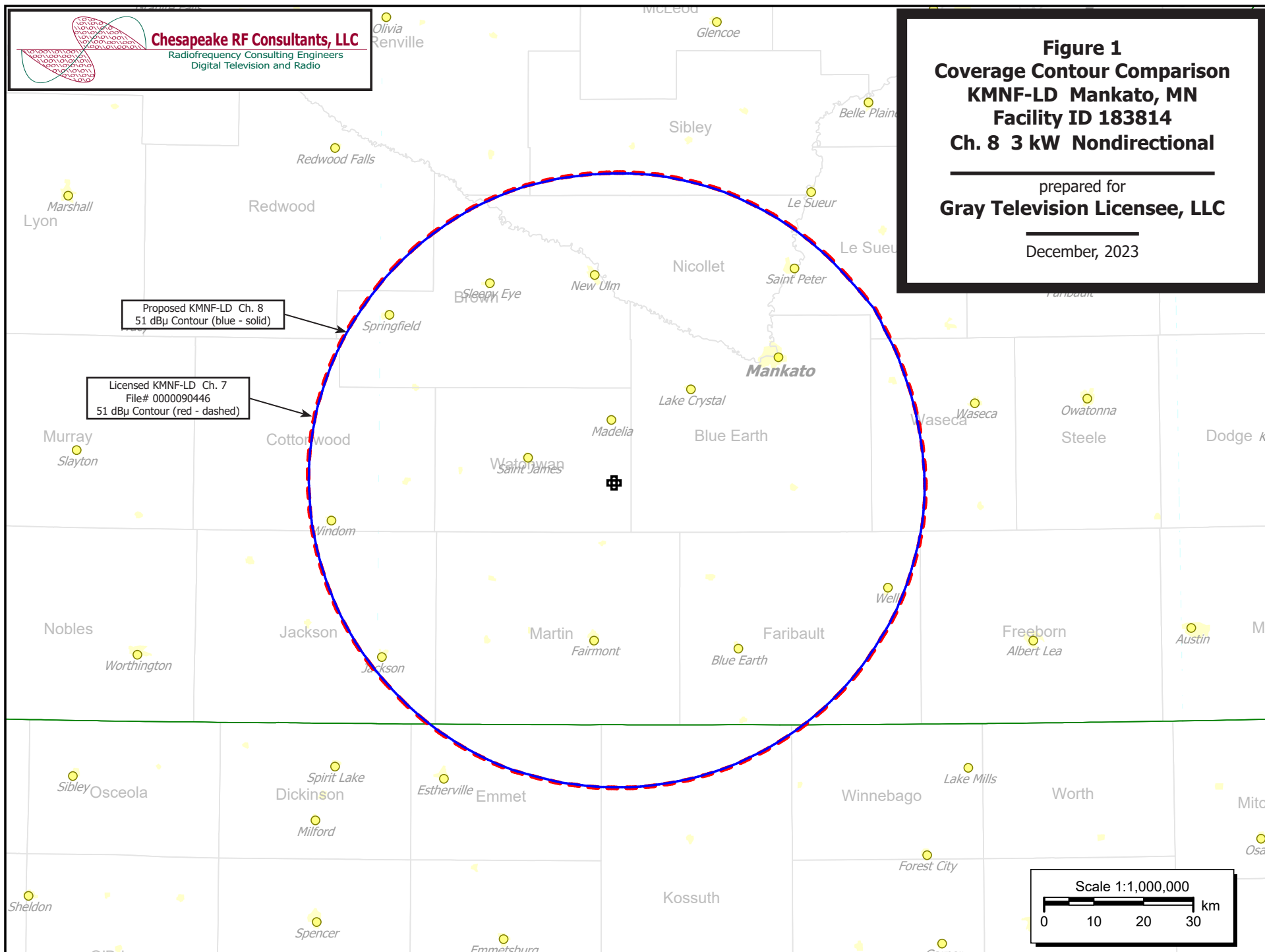


Table 1 KMNF-LD Ch. 7 TVStudy Displacement Summary
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Interference caused to KONC Ch. 7 Alexandria, MN

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

Interference to BLANK0000220950 LIC scenario 1

****IX: 3.64% interference caused**

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KONC	D7	DT	LIC	ALEXANDRIA, MN	BLANK0000220950	
Undesireds:	KMNF-LD	D7	LD	LIC	MANKATO, MN	BLANK0000090446	181.4 km
	KJRR	D7	DT	LIC	JAMESTOWN, ND	BLCDT20090622AEP	360.5
	KTW	D7	DT	LIC	SIOUX FALLS, SD	BLANK0000112667	281.5
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	384.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
34003.9	1,611,709	33598.5	1,580,676	33547.1	1,571,021	31225.5 1,513,761	6.92 3.64
Undesired		Total IX		Unique IX, before		Unique IX, after	
KMNF-LD	D7 LD LIC	2344.8	60,257			2321.6 57,260	
KJRR	D7 DT LIC	10.0	18	10.0	18	9.0 18	
KTW	D7 DT LIC	18.1	17	18.1	17	3.0 9	
WSAW-TV	D7 DT LIC	23.2	9,620	23.2	9,620	16.1 6,631	

Table 2 KMNF-LD TVStudy Analysis of Proposal

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tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: KMNF-LD_Ch-8, Model: Longley-Rice
Start: 2023.12.14 08:15:43

Study created: 2023.12.14 08:15:43

Study build station data: LMS TV 2023-12-04

Proposal: KMNF-LD D8 LD APP MANKATO, MN
File number: KMNF-LD_Ch-8
Facility ID: 183814
Station data: User record
Record ID: 227
Country: U.S.

Build options:
Protect pre-transition records not on baseline channel

Search options:
Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	269.2 km
No	KONC	D7	DT	LIC	ALEXANDRIA, MN	BLANK0000220950	181.4
No	KTTW	D7	DT	LIC	SIOUX FALLS, SD	BLANK0000112667	180.1
Yes	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	245.0
No	WMWC-TV	D8	DT	APP	GALESBURG, IL	BLANK0000127477	440.1
No	WMWC-TV	D8	DT	LIC	GALESBURG, IL	BLCDT20120820AAQ	440.1
No	WDSE	D8	DT	LIC	DULUTH, MN	BLEDT20090618ABE	364.1
No	K08QE-D	D8	LD	LIC	FERGUS FALLS, MN	BLANK0000072415	309.8
No	KLKN	D8	DT	LIC	LINCOLN, NE	BLANK0000143340	414.2
Yes	KESD-TV	D8	DT	LIC	BROOKINGS, SD	BLEDT20090527AGV	229.1
No	K08PM-D	D8	LD	LIC	WAGNER, SD	BLDTV20120621AAF	306.3
Yes	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	246.2
No	KCRG-TV	D9	DT	LIC	CEDAR RAPIDS, IA	BLANK0000001351	274.4
No	KCAU-TV	D9	DT	LIC	SIOUX CITY, IA	BLCDT20100702BMT	210.4
No	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	161.1

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D8
Mask: Full Service
Latitude: 43 56 12.30 N (NAD83)
Longitude: 94 24 39.00 W
Height AMSL: 613.9 m
HAAT: 0.0 m
Peak ERP: 3.00 kW
Antenna: Omnidirectional
Elev Pattn: Generic
Elec Tilt: 2.00

48.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	3.00 kW	301.6 m	62.1 km
45.0	3.00	305.3	62.3
90.0	3.00	303.2	62.2
135.0	3.00	292.5	61.6
180.0	3.00	280.5	60.9
225.0	3.00	277.7	60.7
270.0	3.00	286.6	61.2
315.0	3.00	294.6	61.7

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 293 m

Distance to Canadian border: 501.4 km

Table 2 KMNF-LD TVStudy Analysis of Proposal
(page 2 of 6)



Distance to Mexican border: 1691.1 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 225.9 degrees Distance: 469.9 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 248.5 degrees Distance: 985.7 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%

Interference to BLANK0000207654 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	245.0 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	160.6
	WMWC-TV	D8	DT	APP	GALESBURG, IL	BLANK0000127477	275.2
	KLKN	D8	DT	LIC	LINCOLN, NE	BLANK0000143340	324.2
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	314.3
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
50681.8		1,178,266		49560.3		1,092,767	0.07 0.01
				46662.8		1,092,767	
				46631.6		1,092,707	
Undesired		Total IX		Unique IX, before		Unique IX, after	
KMNF-LD D8 LD APP		83.5		250		31.2	60
KWWL D7 DT LIC		1259.5		49,091		700.5	12,516
WMWC-TV D8 DT APP		1000.0		32,799		500.6	2,338
KLKN D8 DT LIC		761.7		7,646		761.7	7,646
WKBT-DT D8 DT LIC		772.6		34,897		313.2	1,527

Interference to BLANK0000207654 LIC scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	245.0 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	160.6
	WMWC-TV	D8	DT	LIC	GALESBURG, IL	BLCDT20120820AAQ	275.2
	KLKN	D8	DT	LIC	LINCOLN, NE	BLANK0000143340	324.2
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	314.3
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
50681.8		1,178,266		49560.3		1,093,638	0.07 0.01
				46858.3		1,093,578	
				46827.2		1,093,578	
Undesired		Total IX		Unique IX, before		Unique IX, after	
KMNF-LD D8 LD APP		83.5		250		31.2	60
KWWL D7 DT LIC		1259.5		49,091		782.5	13,952
WMWC-TV D8 DT LIC		628.7		23,889		303.0	1,456
KLKN D8 DT LIC		761.7		7,646		761.7	7,646
WKBT-DT D8 DT LIC		772.6		34,897		337.4	1,563

Interference to BLEDT20090527AGV LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KESD-TV	D8	DT	LIC	BROOKINGS, SD	BLEDT20090527AGV	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	229.1 km
	KTTW	D7	DT	LIC	SIOUX FALLS, SD	BLANK0000112667	106.6
	KLKN	D8	DT	LIC	LINCOLN, NE	BLANK0000143340	384.0
	KZSD-TV	D8	DT	LIC	MARTIN, SD	BLEDT20090527AGU	360.8
	DKABY-TV	D9	DT	BL	ABERDEEN, SD	DTVBL48659	100.5

Table 2 KMNF-LD TVStudy Analysis of Proposal
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Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
26513.6 165,941	24996.6 158,263	23236.6 149,795	23116.9 149,317	0.52 0.32
Undesired	Total IX	Unique IX, before	Unique IX, after	
KMNF-LD D8 LD APP	135.9 1,286		119.7 478	
KTTW D7 DT LIC	264.8 6,740	260.8 6,676	245.5 5,892	
KLKN D8 DT LIC	74.3 258	70.3 194	70.3 194	
KZSD-TV D8 DT LIC	9.0 2	1.0 0	1.0 0	
DKABY-TV D9 DT BL	1424.0 1,534	1416.0 1,532	1416.0 1,532	

Interference to BLANK0000222842 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	APP	GALESBURG, IL	BLANK0000127477	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLCDT20090618ABE	306.3
	WMVS	D8	DT	APP	MILWAUKEE, WI	BLANK0000035791	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	CP	WAUSAU, WI	BLANK0000224051	159.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
42765.5 934,603	40625.8 878,398	38452.1 832,539	38424.9 832,019	0.07 0.06
Undesired	Total IX	Unique IX, before	Unique IX, after	
KMNF-LD D8 LD APP	138.0 1,969		27.2 520	
KWWL D7 DT LIC	69.2 892	5.0 71	5.0 71	
WSAW-TV D7 DT LIC	155.2 17,068	0.0 0	0.0 0	
KCCI D8 DT LIC	860.7 7,104	624.5 4,715	563.9 3,535	
WMWC-TV D8 DT APP	395.6 3,639	90.1 331	89.1 318	
WNMU D8 DT LIC	3.0 71	0.0 0	0.0 0	
WDSE D8 DT LIC	359.2 10,633	326.0 10,415	311.9 10,309	
WMVS D8 DT APP	609.2 7,011	438.7 5,107	438.7 5,107	
KMSP-TV D9 DT LIC	46.1 1,772	19.0 1,633	18.0 1,633	
WAOW D9 DT CP	317.7 19,938	126.3 2,651	126.3 2,651	

Interference to BLANK0000222842 LIC scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	APP	GALESBURG, IL	BLANK0000127477	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLCDT20090618ABE	306.3
	WMVS	D8	DT	APP	MILWAUKEE, WI	BLANK0000035791	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	LIC	WAUSAU, WI	BLCDT20120627ABL	159.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
42765.5 934,603	40625.8 878,398	38521.3 833,655	38494.1 833,135	0.07 0.06
Undesired	Total IX	Unique IX, before	Unique IX, after	
KMNF-LD D8 LD APP	138.0 1,969		27.2 520	
KWWL D7 DT LIC	69.2 892	5.0 71	5.0 71	
WSAW-TV D7 DT LIC	155.2 17,068	0.0 0	0.0 0	
KCCI D8 DT LIC	860.7 7,104	624.5 4,715	563.9 3,535	
WMWC-TV D8 DT APP	395.6 3,639	90.1 331	89.1 318	
WNMU D8 DT LIC	3.0 71	0.0 0	0.0 0	
WDSE D8 DT LIC	359.2 10,633	326.0 10,415	311.9 10,309	
WMVS D8 DT APP	609.2 7,011	455.8 5,286	455.8 5,286	
KMSP-TV D9 DT LIC	46.1 1,772	19.0 1,633	18.0 1,633	

Table 2 KMNF-LD TVStudy Analysis of Proposal
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WAOW D9 DT LIC 230.4 18,643 57.2 1,535 57.2 1,535

Interference to BLANK0000222842 LIC scenario 3

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	LIC	GALESBURG, IL	BLCDT20120820AAQ	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLEDT20090618ABE	306.3
	WMVS	D8	DT	APP	MILWAUKEE, WI	BLANK0000035791	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	CP	WAUSAU, WI	BLANK0000224051	159.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
42765.5 934,603		40625.8 878,398		38495.2 832,719		38467.0 832,186	0.07 0.06
Undesired			Total IX	Unique IX, before		Unique IX, after	
KMNF-LD D8 LD APP			138.0 1,969			28.2 533	
KWWL D7 DT LIC			69.2 892	7.0 77		7.0 77	
WSAW-TV D7 DT LIC			155.2 17,068	0.0 0		0.0 0	
KCCI D8 DT LIC			860.7 7,104	692.5 5,636		627.9 4,449	
WMWC-TV D8 DT LIC			235.3 1,760	47.0 151		47.0 151	
WNMU D8 DT LIC			3.0 71	0.0 0		0.0 0	
WDSE D8 DT LIC			359.2 10,633	326.0 10,415		311.9 10,309	
WMVS D8 DT APP			609.2 7,011	478.9 5,674		478.9 5,674	
KMSP-TV D9 DT LIC			46.1 1,772	19.0 1,633		18.0 1,633	
WAOW D9 DT CP			317.7 19,938	126.3 2,651		126.3 2,651	

Interference to BLANK0000222842 LIC scenario 4

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	LIC	GALESBURG, IL	BLCDT20120820AAQ	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLEDT20090618ABE	306.3
	WMVS	D8	DT	APP	MILWAUKEE, WI	BLANK0000035791	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	LIC	WAUSAU, WI	BLCDT20120627ABL	159.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
42765.5 934,603		40625.8 878,398		38564.4 833,835		38536.2 833,302	0.07 0.06
Undesired			Total IX	Unique IX, before		Unique IX, after	
KMNF-LD D8 LD APP			138.0 1,969			28.2 533	
KWWL D7 DT LIC			69.2 892	7.0 77		7.0 77	
WSAW-TV D7 DT LIC			155.2 17,068	0.0 0		0.0 0	
KCCI D8 DT LIC			860.7 7,104	692.5 5,636		627.9 4,449	
WMWC-TV D8 DT LIC			235.3 1,760	47.0 151		47.0 151	
WNMU D8 DT LIC			3.0 71	0.0 0		0.0 0	
WDSE D8 DT LIC			359.2 10,633	326.0 10,415		311.9 10,309	
WMVS D8 DT APP			609.2 7,011	496.0 5,853		496.0 5,853	
KMSP-TV D9 DT LIC			46.1 1,772	19.0 1,633		18.0 1,633	
WAOW D9 DT LIC			230.4 18,643	57.2 1,535		57.2 1,535	

Interference to BLANK0000222842 LIC scenario 5

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km

Table 2 KMNF-LD TVStudy Analysis of Proposal
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KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
WMWC-TV	D8	DT	APP	GALESBURG, IL	BLANK0000127477	318.6
WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
WDSE	D8	DT	LIC	DULUTH, MN	BLCDT20090618ABE	306.3
WMVS	D8	DT	LIC	MILWAUKEE, WI	BLANK0000040294	297.7
KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
WAOW	D9	DT	CP	WAUSAU, WI	BLANK0000224051	159.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
42765.5 934,603	40625.8 878,398	38616.4 834,655	38589.2 834,135	0.07 0.06

Undesired	Total IX	Unique IX, before	Unique IX, after
KMNF-LD D8 LD APP	138.0 1,969	27.2 520	
KWWL D7 DT LIC	69.2 892	5.0 71	5.0 71
WSAW-TV D7 DT LIC	155.2 17,068	0.0 0	0.0 0
KCCI D8 DT LIC	860.7 7,104	626.5 4,715	565.9 3,535
WMWC-TV D8 DT APP	395.6 3,639	108.2 667	107.2 654
WNMU D8 DT LIC	3.0 71	0.0 0	0.0 0
WDSE D8 DT LIC	359.2 10,633	327.1 10,415	312.9 10,309
WMVS D8 DT LIC	396.8 4,461	274.4 2,991	274.4 2,991
KMSP-TV D9 DT LIC	46.1 1,772	19.0 1,633	18.0 1,633
WAOW D9 DT CP	317.7 19,938	131.4 2,651	131.4 2,651

Interference to BLANK0000222842 LIC scenario 6

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	APP	GALESBURG, IL	BLANK0000127477	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLCDT20090618ABE	306.3
	WMVS	D8	DT	LIC	MILWAUKEE, WI	BLANK0000040294	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	LIC	WAUSAU, WI	BLCDT20120627ABL	159.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
42765.5 934,603	40625.8 878,398	38688.6 835,771	38661.4 835,251	0.07 0.06

Undesired	Total IX	Unique IX, before	Unique IX, after
KMNF-LD D8 LD APP	138.0 1,969	27.2 520	
KWWL D7 DT LIC	69.2 892	5.0 71	5.0 71
WSAW-TV D7 DT LIC	155.2 17,068	0.0 0	0.0 0
KCCI D8 DT LIC	860.7 7,104	626.5 4,715	565.9 3,535
WMWC-TV D8 DT APP	395.6 3,639	108.2 667	107.2 654
WNMU D8 DT LIC	3.0 71	0.0 0	0.0 0
WDSE D8 DT LIC	359.2 10,633	327.1 10,415	312.9 10,309
WMVS D8 DT LIC	396.8 4,461	288.4 3,170	288.4 3,170
KMSP-TV D9 DT LIC	46.1 1,772	19.0 1,633	18.0 1,633
WAOW D9 DT LIC	230.4 18,643	59.2 1,535	59.2 1,535

Interference to BLANK0000222842 LIC scenario 7

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	LIC	GALESBURG, IL	BLCDT20120820AAQ	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLCDT20090618ABE	306.3
	WMVS	D8	DT	LIC	MILWAUKEE, WI	BLANK0000040294	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	CP	WAUSAU, WI	BLANK0000224051	159.8

Table 2 KMNF-LD TVStudy Analysis of Proposal
(page 6 of 6)

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
42765.5 934,603	40625.8 878,398	38667.5 835,105	38639.3 834,572	0.07 0.06
Undesired	Total IX	Unique IX, before	Unique IX, after	
KMNF-LD D8 LD APP	138.0 1,969		28.2 533	
KWWL D7 DT LIC	69.2 892	7.0 77	7.0 77	
WSAW-TV D7 DT LIC	155.2 17,068	0.0 0	0.0 0	
KCCI D8 DT LIC	860.7 7,104	694.5 5,636	629.9 4,449	
WMWC-TV D8 DT LIC	235.3 1,760	57.1 217	57.1 217	
WNMU D8 DT LIC	3.0 71	0.0 0	0.0 0	
WDSE D8 DT LIC	359.2 10,633	327.1 10,415	312.9 10,309	
WMVS D8 DT LIC	396.8 4,461	306.6 3,288	306.6 3,288	
KMSP-TV D9 DT LIC	46.1 1,772	19.0 1,633	18.0 1,633	
WAOW D9 DT CP	317.7 19,938	131.4 2,651	131.4 2,651	

Interference to BLANK0000222842 LIC scenario 8

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WKBT-DT	D8	DT	LIC	LA CROSSE, WI	BLANK0000222842	
Undesireds:	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	246.2 km
	KWWL	D7	DT	LIC	WATERLOO, IA	BLCDT20100707AXT	192.3
	WSAW-TV	D7	DT	LIC	WAUSAU, WI	BLCDT20120404ABC	159.8
	KCCI	D8	DT	LIC	DES MOINES, IA	BLANK0000207654	314.3
	WMWC-TV	D8	DT	LIC	GALESBURG, IL	BLCDT20120820AAQ	318.6
	WNMU	D8	DT	LIC	MARQUETTE, MI	BLANK0000117434	370.9
	WDSE	D8	DT	LIC	DULUTH, MN	BLEDT20090618ABE	306.3
	WMVS	D8	DT	LIC	MILWAUKEE, WI	BLANK0000040294	297.7
	KMSP-TV	D9	DT	LIC	MINNEAPOLIS, MN	BLANK0000218437	177.7
	WAOW	D9	DT	LIC	WAUSAU, WI	BLCDT20120627ABL	159.8

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
42765.5 934,603	40625.8 878,398	38739.7 836,221	38711.5 835,688	0.07 0.06
Undesired	Total IX	Unique IX, before	Unique IX, after	
KMNF-LD D8 LD APP	138.0 1,969		28.2 533	
KWWL D7 DT LIC	69.2 892	7.0 77	7.0 77	
WSAW-TV D7 DT LIC	155.2 17,068	0.0 0	0.0 0	
KCCI D8 DT LIC	860.7 7,104	694.5 5,636	629.9 4,449	
WMWC-TV D8 DT LIC	235.3 1,760	57.1 217	57.1 217	
WNMU D8 DT LIC	3.0 71	0.0 0	0.0 0	
WDSE D8 DT LIC	359.2 10,633	327.1 10,415	312.9 10,309	
WMVS D8 DT LIC	396.8 4,461	320.7 3,467	320.7 3,467	
KMSP-TV D9 DT LIC	46.1 1,772	19.0 1,633	18.0 1,633	
WAOW D9 DT LIC	230.4 18,643	59.2 1,535	59.2 1,535	

Interference to proposal scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KMNF-LD	D8	LD	APP	MANKATO, MN	KMNF-LD_Ch-8	

Service area	Terrain-limited	IX-free	Percent IX
11934.1 190,500	11910.0 184,580	11910.0 184,580	0.00 0.00

**Channel and
Facility
Information**

Section	Question	Response
Facility ID	183814	
State	Minnesota	
City	Mankato	
LPT Channel	8	

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1025277
Coordinates (NAD83)	Latitude	43° 56' 12.3" N+
	Longitude	094° 24' 39.0" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	327.0 meters
	Support Structure Height	307.4 meters
	Ground Elevation (AMSL)	320.4 meters
Antenna Data	Height of Radiation Center Above Ground Level	293.5 meters
	Height of Radiation Center Above Mean Sea Level	613.9 meters
	Effective Radiated Power	3 kW

Antenna
Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	Dielectric
	Model	TLS-V4
	Rotation	
	Electrical Beam Tilt	2.0
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
Elevation Radiation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	
	Out-of-Channel Emission Mask:	Full Service