

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

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**K56GF – SIOUX FALLS, SOUTH DAKOTA  
FACILITY ID: 67998**

**DIGITAL NETWORKS—MIDWEST, LLC**

**AUGUST 2020**

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**8.25.2020**

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## *APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT*

The following engineering statement and attached exhibits have been prepared for **Digital Networks-Midwest, LLC** ("Midwest"), licensee of low power television station K56GF at Sioux Falls, South Dakota, and are in support of their application for modification of construction permit.<sup>1</sup> This application proposes a modification to the displacement construction permit for the facility under FCC File No. BDISDTL-20110829ABH. The proposed changes include a relocation of the facility, changes to the maximum effective radiated power and antenna, and related elevation changes.

The existing construction permit for displacement for the facility authorizes operation on channel 23 with a maximum effective radiated power of 15 kW at a center of radiation of 499 meters above mean sea level, 57 meters above ground level, utilizing a directional antenna. The proposed facility would operate on television channel 23 with a maximum effective radiated power of 2 kW at a center of radiation of 490.3 meters above mean sea level, 30 meters above ground level, also utilizing a directional antenna. The proposed directional antenna is a single Kathrein-Scala PR-TV oriented at 250 degrees true.

The proposed technical parameters represent a minor change to both the licensed K56HF analog facilities, and the authorized displaced parameters on channel 23. Exhibit E-1 illustrates that the proposed 51 dBu F(50,90) dBu contour overlaps both the authorized 51 dBu F(50,90) contour and the licensed 74 dBu F(50,50) contour. Additionally, the proposed transmitter site is located within 30 miles of both the licensed and authorized transmitter sites.

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<sup>1</sup> The Facility ID for K56GF at Sioux Falls, South Dakota is 67998.

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Exhibit E-2 is the study output from *TVStudy* for the proposed facility. This study demonstrates that there are no outgoing interference check failures to any proposed or authorized facilities. This study was performed at a cell size resolution of 1.0 km, and a profile spacing increment of 1.0 km.

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

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  $7.67 \mu\text{W}/\text{cm}^2$ . This value is substantially less than the upper limit of the uncontrolled environment condition.

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 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

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the rules, or on the output of *TVStudy*. The proposed facility also complies with Sections 74.793(e)-(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  
August 25, 2020

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**K56GF-D.X**

BDISDTL-20110829ABH  
Latitude: 43-34-25.90 N  
Longitude: 096-38-55.10 W  
ERP: 2.00 kW  
Channel: 23  
Frequency: 527.0 MHz  
AMSL Height: 490.3 m  
Horiz. Pattern: Directional  
Prop Model: FCC Contour

**K56GF**

BLTT-20001020ABR  
Latitude: 43-33-14 N  
Longitude: 096-41-06 W  
ERP: 10.10 kW  
Channel: 56  
Frequency: 725.0 MHz  
AMSL Height: 499.0 m  
Horiz. Pattern: Directional  
Prop Model: FCC Contour

**K56GF-D.C**

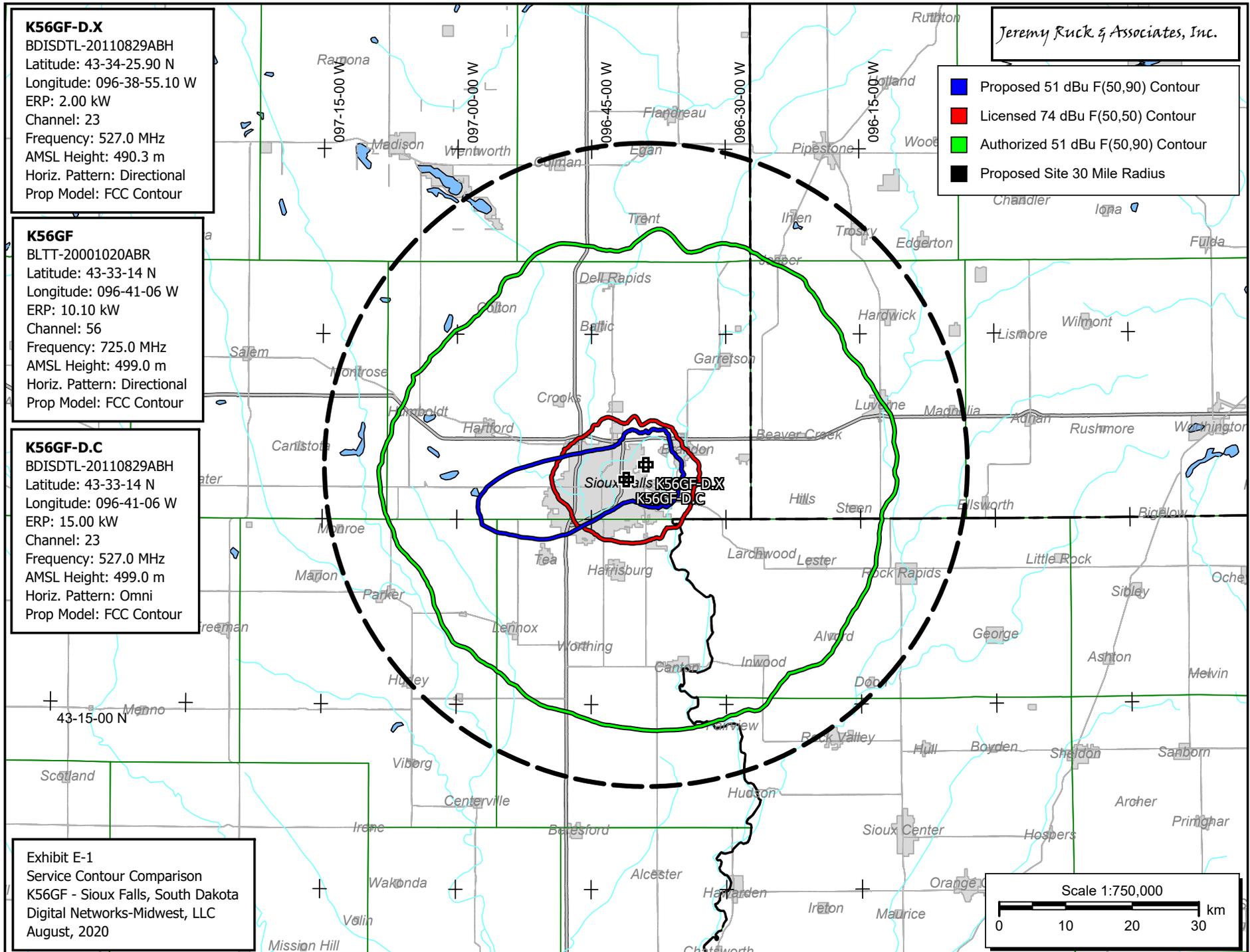
BDISDTL-20110829ABH  
Latitude: 43-33-14 N  
Longitude: 096-41-06 W  
ERP: 15.00 kW  
Channel: 23  
Frequency: 527.0 MHz  
AMSL Height: 499.0 m  
Horiz. Pattern: Omni  
Prop Model: FCC Contour

Exhibit E-1

Service Contour Comparison  
K56GF - Sioux Falls, South Dakota  
Digital Networks-Midwest, LLC  
August, 2020

Jeremy Ruck & Associates, Inc.

- Proposed 51 dBu F(50,90) Contour
- Licensed 74 dBu F(50,50) Contour
- Authorized 51 dBu F(50,90) Contour
- Proposed Site 30 Mile Radius



## Exhibit E-2 - TVStudy Interference Study

tvstudy v2.2.5 (4uoc83)  
Database: 127.0.0.1, Study: KAVC CH 27 ASRN 1254146 2 kW ERP 1581.4 m AMSL PR-TV x1 @235BLANK0000029989,  
Model: Longley-Rice  
Start: 2020.08.12 13:36:05

Study created: 2020.08.12 13:36:05

Study build station data: LMS TV 2020-08-12

Proposal: KAVC-LD D27 LD APP LOVELAND, CO  
File number: BLANK0000029989  
Facility ID: 68077  
Station data: User record  
Record ID: 194  
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	K26OT-D	D26	LD	LIC	AKRON, CO	BLANK0000117624	154.3 km
No	K26GY-D	D26	LD	LIC	BRECKENRIDGE, CO	BLANK0000068744	113.2
No	KKTV	D26	DT	LIC	COLORADO SPRINGS, CO	BLANK0000094108	150.6
No	K26FM-D	D26	LD	LIC	PEETZ, CO	BLDTT20110928AKL	166.5
No	KZFC-LD	D26-	LD	LIC	WINDSOR, CO	BLANK0000099248	39.6
No	K26KR-D	D26	LD	CP	CHEYENNE, WY	BNPDTL20100324ACJ	116.7
No	K27OF-D	D27	LD	LIC	CRESTED BUTTE, CO	BLANK0000068625	222.0
Yes	K27MA-D	D27	LD	LIC	DENVER, CO	BLDTL20120802ABC	50.1
No	K27CB	N27+	TX	LIC	FRASER, ETC., CO	BLTT19890609IM	78.8
No	K27LK-D	D27	LD	LIC	GATEVIEW, CO	BLDTT20120106ABO	287.6
No	KHGS-LD	D27	LD	CP	GLENWOOD SPRINGS, CO	BLANK0000052045	217.7
No	KGJT-CD	D27	DC	LIC	GRAND JUNCTION, CO	BLDTA20131202CIV	306.2
No	K27IH-D	D27	LD	LIC	HOLYOKE, CO	BLDTT20070604ADF	220.2
No	K27KX-D	D27	LD	LIC	LAS ANIMAS, CO	BLDTT20110509ACX	284.0
No	K27KA-D	D27	LD	LIC	PARLIN, CO	BLDTT20100713APC	233.9
Yes	KVSN-DT	D27	DT	LIC	PUEBLO, CO	BLANK0000074846	150.6
No	K27MT-D	D27	LD	LIC	ROMEO, CO	BLANK0000055052	373.0
No	K27KY-D	D27	LD	CP	STERLING, CO	BLANK0000068912	167.1
No	K48LO-D	D27	LD	CP	WOODY CREEK, CO	BLANK0000075136	195.8
No	KHGI-CD	D27	DC	LIC	NORTH PLATTE, NE	BLANK0000114628	376.4
No	K15DI	D27	LD	CP	VERNAL, UT	BLANK0000052795	360.1
No	KWYF-LD	D27	LD	LIC	CASPER, WY	BLDTT20120615ACV	317.7
Yes	KLWY	D27	DT	LIC	CHEYENNE, WY	BLCDT20090227AAD	105.6
No	K28HI-D	D28	LD	LIC	BRECKENRIDGE/DILLON, CO	BLANK0000068743	113.2
No	K28KU-D	D28	LD	LIC	CRESTED BUTTE, CO	BLDTL20121119AOU	222.0
No	KTFD-TV	D28	DT	LIC	DENVER, CO	BLANK0000066076	49.8
No	K28FW-D	D28	LD	LIC	PEETZ, CO	BLDTT20110928AKK	166.5
No	K28GE-D	D28+	LD	LIC	WOODLAND PARK, CO	BLANK0000040556	124.6
No	K28GE-D	N28+	TX	LIC	WOODLAND PARK, CO	BLTTL19991203AAV	124.5
No	K28JH-D	D28	LD	LIC	YUMA, CO	BLDTT20120221AAX	177.4
No	K28MF-D	D28	LD	CP	CHEYENNE, WY	BNPDTL20100510AEU	116.7
No	K30CR	N30-	TX	LIC	FRASER, ETC., CO	BLTT19890609IK	78.8
No	K34AC-D	N34	TX	APP	YUMA, CO	BMPTT20011106AAM	177.4

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D27  
Mask: Full Service  
Latitude: 40 5 59.00 N (NAD83)  
Longitude: 104 54 4.00 W  
Height AMSL: 1581.4 m  
HAAT: 61.5 m  
Peak ERP: 2.00 kW  
Antenna: SCA PR-TV x1 235.0 deg

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## Exhibit E-2 - TVStudy Interference Study

Elev Pattnr: Generic

50.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.004 kW	102.0 m	8.1 km
45.0	0.001	86.9	5.9
90.0	0.002	63.1	5.8
135.0	0.004	59.5	6.4
180.0	0.006	29.0	5.0
225.0	1.31	7.0	19.1
270.0	0.029	60.5	10.4
315.0	0.005	84.0	7.8

Database HAAT does not agree with computed HAAT  
 Database HAAT: 62 m Computed HAAT: 61 m

Distance to Canadian border: 989.2 km

Distance to Mexican border: 935.8 km

Conditions at FCC monitoring station: Grand Island NE  
 Bearing: 78.4 degrees Distance: 554.4 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
 Bearing: 274.0 degrees Distance: 30.0 km  
 ERP: 0.018 kW Field strength: 54.6 dBu, 0.5 mV/m

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%

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 Interference to BLDL20120802ABC LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	K27MA-D	D27	LD	LIC	DENVER, CO	BLDTL20120802ABC	
Undesireds:	KAVC-LD	D27	LD	APP	LOVELAND, CO	BLANK0000029989	50.1 km
	KVSN-DT	D27	DT	LIC	PUEBLO, CO	BLANK0000074846	114.1
	KLWY	D27	DT	LIC	CHEYENNE, WY	BLCDDT20090227AAD	149.6
	KTFD-TV	D28	DT	LIC	DENVER, CO	BLANK0000066076	0.4
	K28GE-D	D28+	LD	LIC	WOODLAND PARK, CO	BLANK0000040556	83.8
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	350.4	76,554	275.9	19,293	157.1	11,058	3.20 0.06

Undesired	Total IX	Unique IX, before	Unique IX, after
KAVC-LD D27 LD APP	78.5	916	5.0 7
KVSN-DT D27 DT LIC	4.0	13	0.0 0
KLWY D27 DT LIC	78.5	1,597	8.1 28
KTFD-TV D28 DT LIC	77.5	7,698	30.2 6,504

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 Interference to BLANK0000074846 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KVSN-DT	D27	DT	LIC	PUEBLO, CO	BLANK0000074846	
Undesireds:	KAVC-LD	D27	LD	APP	LOVELAND, CO	BLANK0000029989	150.6 km
	KKTV	D26	DT	LIC	COLORADO SPRINGS, CO	BLANK0000094108	0.1
	KLWY	D27	DT	LIC	CHEYENNE, WY	BLCDDT20090227AAD	256.2
	KTFD-TV	D28	DT	LIC	DENVER, CO	BLANK0000066076	114.4
	KOAA-TV	D28	DT	BL	PUEBLO, CO	DTVBL59014	0.0

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## Exhibit E-2 - TVStudy Interference Study

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
34166.9 2,711,233	31207.7 2,302,566	27885.1 1,047,806	27877.2 1,047,560	0.03 0.02

Undesired	Total IX	Unique IX, before	Unique IX, after
KAVC-LD D27 LD APP	116.6 38,969		7.9 246
KKTV D26 DT LIC	51.2 117	45.2 98	45.2 98
KLWY D27 DT LIC	3085.4 1,152,964	1718.3 72,423	1692.6 72,218
KTFD-TV D28 DT LIC	1551.0 1,182,220	183.9 101,679	175.9 99,125
KOAA-TV D28 DT BL	8.0 19	2.0 0	2.0 0

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Interference to BLCDDT20090227AAD LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KLWY	D27	DT	LIC	CHEYENNE, WY	BLCDDT20090227AAD	
Undesireds:	KAVC-LD	D27	LD	APP	LOVELAND, CO	BLANK0000029989	105.6 km
	KVSN-DT	D27	DT	LIC	PUEBLO, CO	BLANK0000074846	256.2
	KTFD-TV	D28	DT	LIC	DENVER, CO	BLANK0000066076	149.3

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
15189.0 540,321	14582.9 538,402	14465.0 535,410	14454.1 534,928	0.08 0.09

Undesired	Total IX	Unique IX, before	Unique IX, after
KAVC-LD D27 LD APP	39.0 713		11.0 482
KVSN-DT D27 DT LIC	91.8 2,132	74.8 1,925	69.8 1,925
KTFD-TV D28 DT LIC	43.0 1,067	26.0 860	15.0 774

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Interference to proposal scenario 1  
56.38% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KAVC-LD	D27	LD	APP	LOVELAND, CO	BLANK0000029989	
Undesireds:	KVSN-DT	D27	DT	LIC	PUEBLO, CO	BLANK0000074846	150.6 km
	KLWY	D27	DT	LIC	CHEYENNE, WY	BLCDDT20090227AAD	105.6
	KTFD-TV	D28	DT	LIC	DENVER, CO	BLANK0000066076	49.8

Service area	Terrain-limited	IX-free	Percent IX
291.1 57,858	291.1 57,858	117.5 25,238	59.65 56.38

Undesired	Total IX	Unique IX	Prcnt Unique IX
KVSN-DT D27 DT LIC	11.0 122	1.0 32	0.34 0.06
KLWY D27 DT LIC	171.6 32,338	152.6 32,099	52.41 55.48
KTFD-TV D28 DT LIC	17.1 470	1.0 250	0.35 0.43

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