

**FM Translator Station K278AN Rapid City, SD  
CH 278D – 103.5 MHz – 0.49 kW  
Rapid City, SD**

**Proposed CH279D – 103.7 MHz – 0.250 kW DA Rapid City, SD**

**September 9, 2021**

**Technical Narrative**

This Technical Narrative and attached exhibits were prepared on behalf of Riverfront Broadcasting, LLC (“Riverfront”), licensee of FM Translator K278AN, Facility ID No. 17677, Rapid City, SD. Riverfront herein is filing a minor modification application to change the frequency of K278AN to first adjacent channel 279D (103.7 MHz). No other changes are being proposed.

The proposed new facility will be used as a fill-in translator for co-owned primary station KDDX, Channel 266C (101.1 MHz), Facility ID No. 24553, licensed to Spearfish, SD. The proposed K278AN facility would operate on Channel 279 (103.3 MHz) with 250 watts directional with the transmit antenna located at 68 meters height above ground level and 102.26 meters HAAT. An exhibit demonstrates that the proposed K278AN FCC F(50,50) 60 dBu contour is contained within the KDDX FCC F(50,50) 60 dBu contour. Therefore, it is believed that this application is in compliance with Section 74.1201(g) of the Commission’s rules.

A channel study is included as an Exhibit. It assumes a Class A 6 kW facility operating on channel 279 and is provided to FCC staff as a convenience to help identify potential contour overlap issues. Exhibits are provided demonstrating Section 74.1204 contour protection to second adjacent full power FM station KIQK Channel 281C1, Rapid City, SD and first adjacent

FM translator K280AJ, Hill City, SD and first adjacent FM translator application 0000151039 for K278AM, Spearfish, SD.

Because there is no change in the transmit location there is no exhibit demonstrating compliance with FCC Section 74.1233(a) "Common Overlap". A study has been undertaken to show the proposed facility is in compliance with the Commission's radio frequency emission limits and is attached as exhibits.

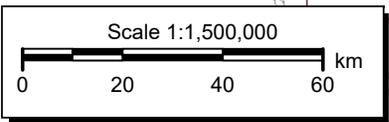
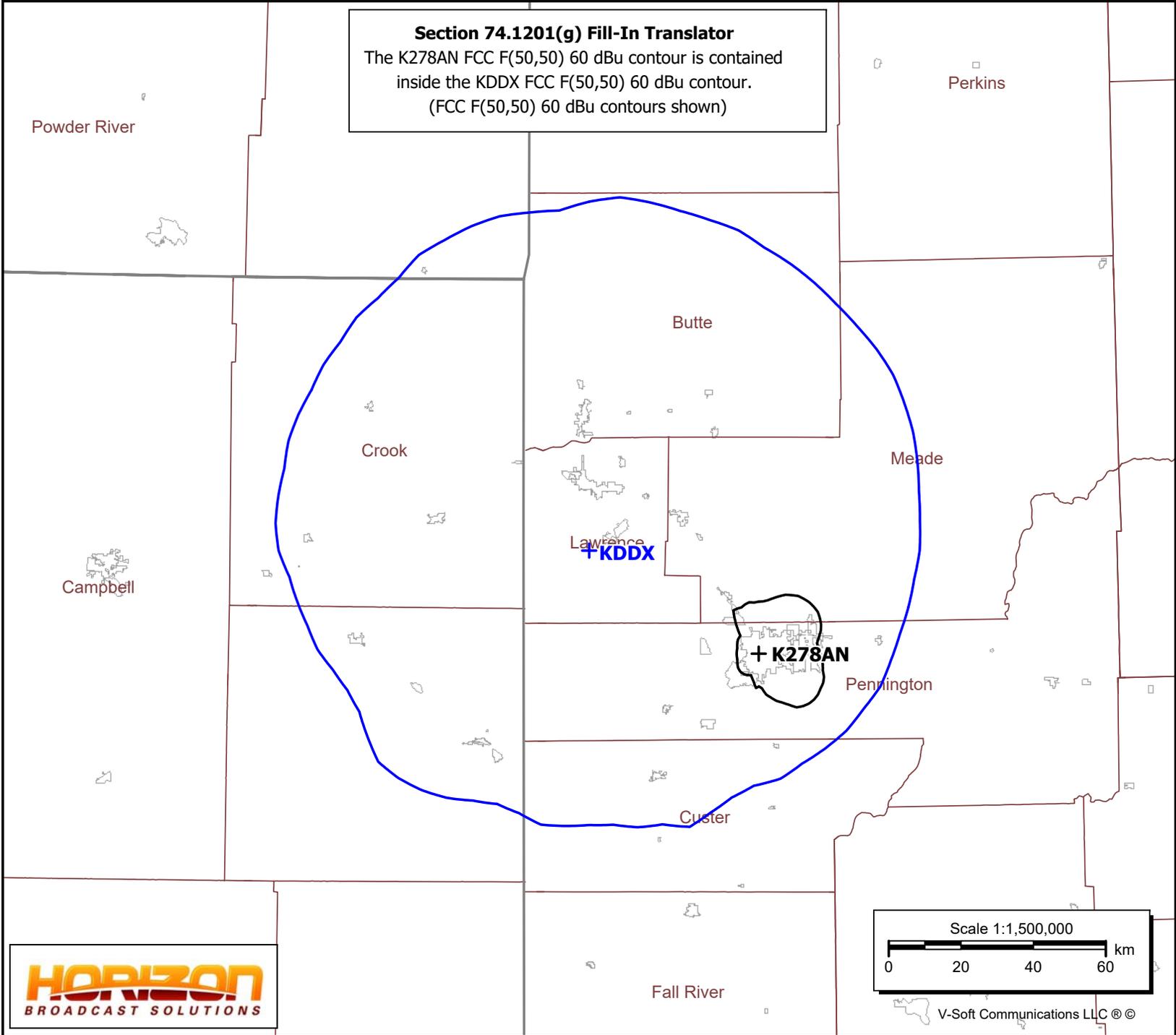
**K278AN**

Rapid City, SD  
BLFT19991105AAU  
Latitude: 44-04-08 N  
Longitude: 103-15-05 W  
ERP: 0.25 kW  
HAAT: 102.26 m  
Channel: 278  
Frequency: 103.5 MHz  
AMSL Height: 1214.0 m  
Elevation: 1146.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**KDDX**

Spearfish, SD  
BLH20000112ABW  
Latitude: 44-19-34.90 N  
Longitude: 103-50-07.70 W  
ERP: 100.00 kW  
HAAT: 545 m  
Channel: 266  
Frequency: 101.1 MHz  
AMSL Height: 2259.0 m  
Elevation: 2120.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**Section 74.1201(g) Fill-In Translator**  
The K278AN FCC F(50,50) 60 dBu contour is contained inside the KDDX FCC F(50,50) 60 dBu contour.  
(FCC F(50,50) 60 dBu contours shown)



V-Soft Communications LLC ©

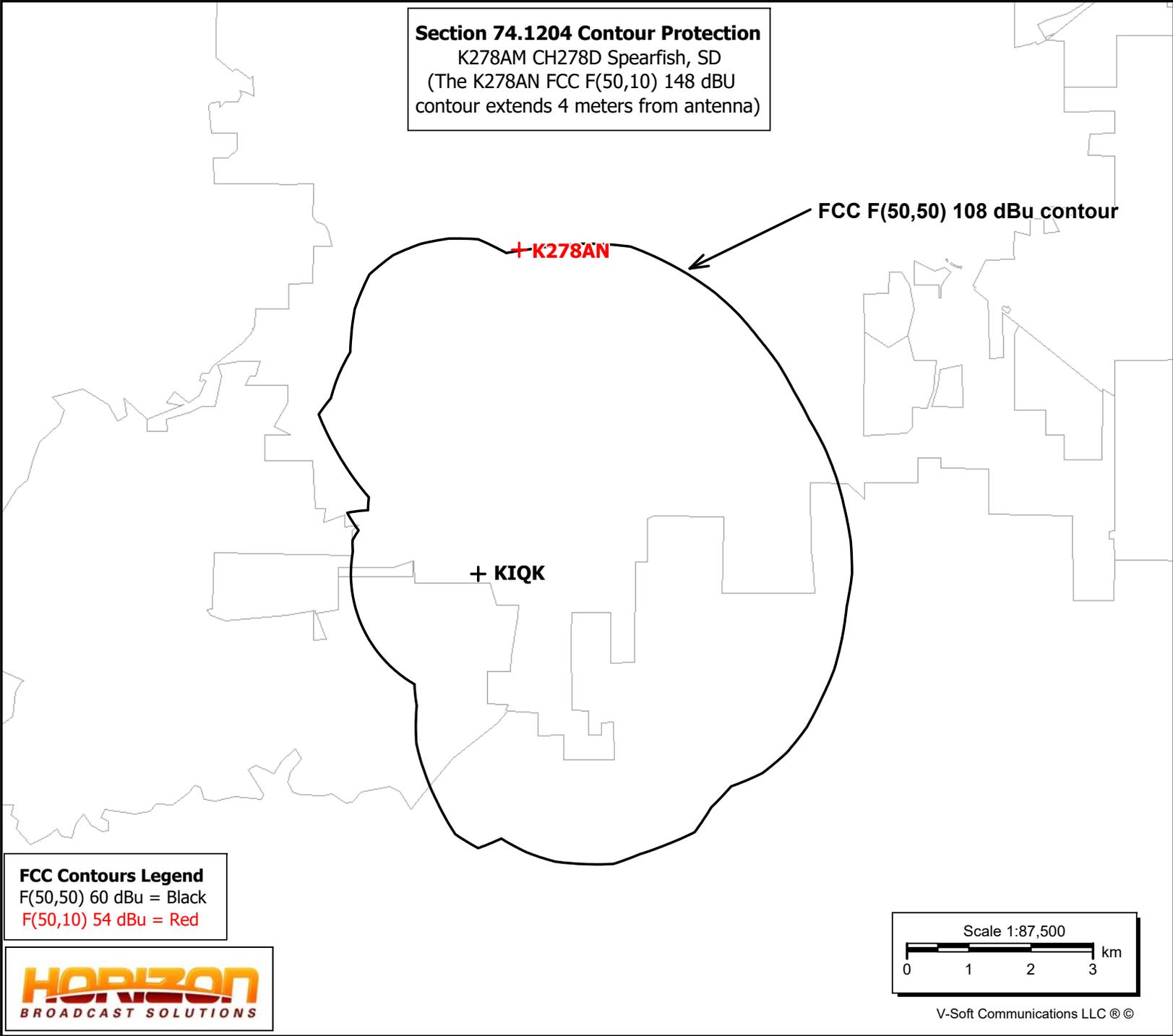
K278AN Class A Study on CH279

REFERENCE							DISPLAY DATES	
44 04 08.0 N.		CLASS = A Int = A					DATA	09-09-21
103 15 05.0 W.		Current Spacings to 3rd Adj.					SEARCH	09-09-21
----- Channel 279 - 103.7 MHz -----								
Call	Channel	Location		Azi	Dist	FCC	Margin	
Lat.	Lng.	Ant	Power		HAAT			
-----								
K278AN	LIC-D 278D	Rapid City		SD 90.0	0.0	33.5	-33.5	
44 04 08.0	103 15 04.7	DHN	0.280 kW		114 M			
	Riverfront Broadcasting, L		BLFT19991105AAU					
KIQK	LIC 281C1	Rapid City		SD 187.2	5.3	74.5	-69.2	
44 01 18.9	103 15 34.6	CN	100.000 kW		164 M			
	Haugo Broadcasting, Inc.		BLH19940826KA					
<b>Note: See Section 74.1204 Contour Protection: KIQK</b>								
K280AJ	LIC-D 280D	Hill City		SD 238.2	29.8	33.5	-3.7	
43 55 38.9	103 34 02.6	DHN	0.008 kW		-49 M			
	Homeslice Media Group, LLC		BLFT179					
<b>Note: See Section 74.1204 Contour Protection: K280AJ</b>								
KRCS	LIC 226C0	Sturgis		SD 322.1	37.3	24.5	12.8	
44 19 57.9	103 32 21.6	CN	100.000 kW		323 M			
	Homeslice Media Group, LLC		BMLH20041019ABB					
K278AM	APP 278D	Spearfish		SD 301.8	54.8	33.5	21.3	
44 19 34.5	103 50 07.9	CN	0.250 kW		292 M			
	Riverfront Broadcasting, L		0000151039					
<b>Note: See Section 74.1204 Contour Protection: K278AM</b>								
KYDT	LIC 276C1	Pine Haven		WY 295.8	105.8	74.5	31.3	
44 28 34.9	104 26 55.8	CN	25.000 kW		503 M			
	Ultimate Caps, Inc.		BLH20111013AGZ					
K278AM	LIC-D 278D	Spearfish		SD 315.6	66.2	33.5	32.7	
44 29 32.9	103 50 06.7	DHN	0.049 kW		292 M			
	Riverfront Broadcasting, L		BLFT19991105AAY					
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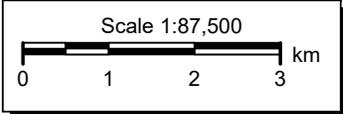
**K278AN**  
Rapid City, SD  
BLFT19991105AAU  
Latitude: 44-04-08 N  
Longitude: 103-15-05 W  
ERP: 458 kW  
HAAT: 102.26 m  
Channel: 278  
Frequency: 103.5 MHz  
AMSL Height: 1214.0 m  
Elevation: 1146.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**KIQK**  
Rapid City, SD  
BLH19940826KA  
Latitude: 44-01-18.90 N  
Longitude: 103-15-34.60 W  
ERP: 100.00 kW  
HAAT: 164 m  
Channel: 281  
Frequency: 104.1 MHz  
AMSL Height: 1292.0 m  
Elevation: 1152.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**Section 74.1204 Contour Protection**  
K278AM CH278D Spearfish, SD  
(The K278AN FCC F(50,10) 148 dBu contour extends 4 meters from antenna)



**FCC Contours Legend**  
F(50,50) 60 dBu = Black  
F(50,10) 54 dBu = Red



# FM and TV Propagation Curves

## Databases & Searches

AM Query

Antenna Height Above Average Terrain (HAAT) Calculator

Antenna Structure Registration (ASRN) Records Within A Radius

Broadcast Station Mailing Address Search

Call Sign Reservation and Authorization System (CSRS)

CDBS Database Public Files

Children's Educational Television Reporting - Form 2100, Schedule H

Children's Programming Query

COLORIT HTML Color Generator

Degrees Minutes Seconds to/from Decimal Degrees

Distance and Azimuths Between Two Sets of Coordinates

Electioneering Communications Database

EEO Filing Search

Filing Systems and Databases

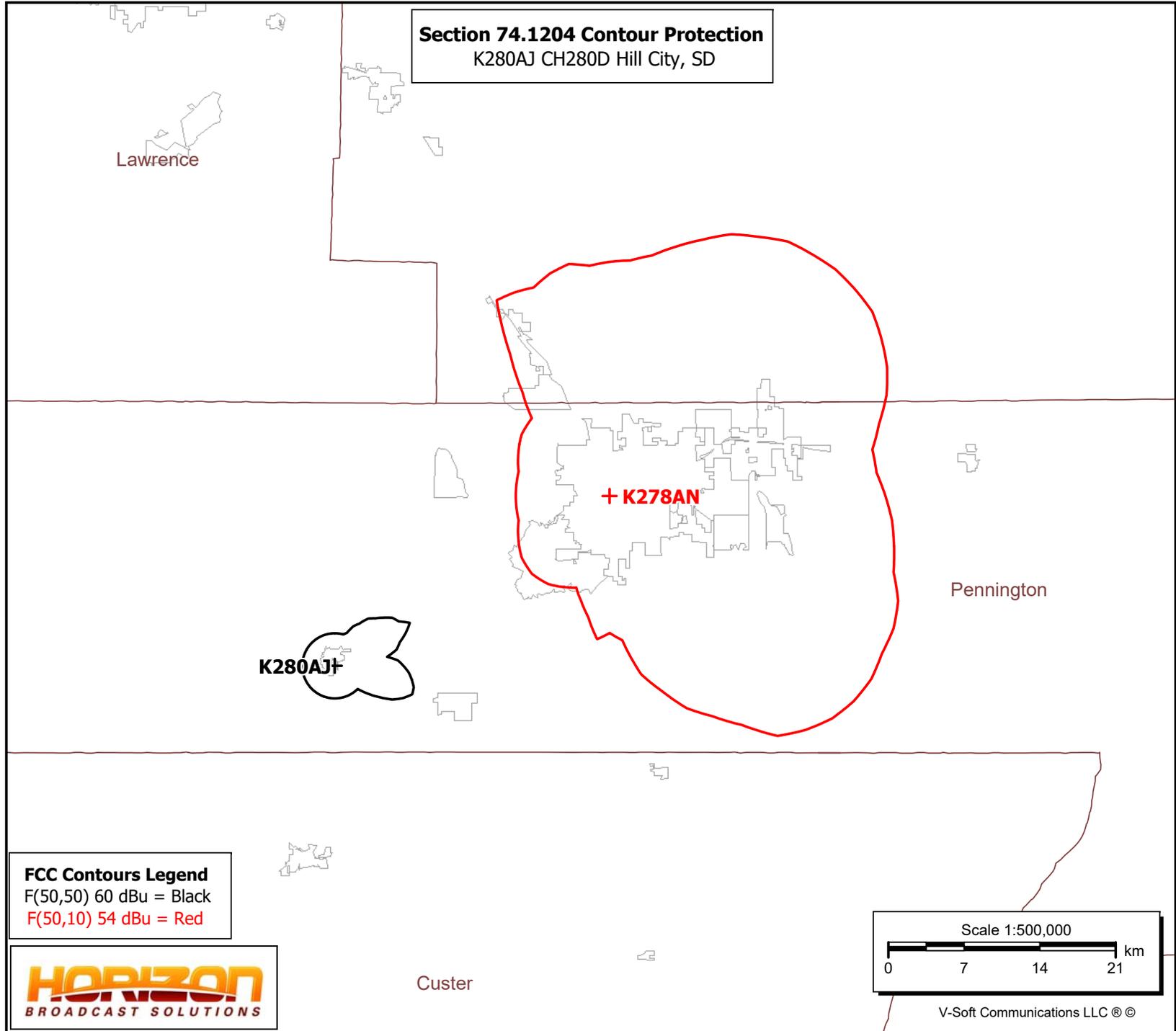
This Javascript calculator uses the FM or TV propagation curves to find the distance to a service or interfering contour, or the corresponding field strength at a given contour distance. [More after the form.](#)

Select Contour Type:	F(50,50) Service Contour -- FM and NTSC (analog) TV F(50,10) Interfering Contour F(50,90) Digital TV Service Contour
Select Channel Range: (not TV Virtual Channel)	FM Radio or TV Transmit Channels 2-6 TV Transmit Channels 7-13 TV Transmit Channels 14-69
Find This:	Field Strength, given a Distance (in km) Distance, Given a Field Strength (in dBu) FM ERP, given Distance and Field Strength [F(50,50) Service Contour]
<input type="text" value="0.25"/> ERP (kW)	<input type="text" value=""/> Distance (km)
<input type="text" value="102"/> HAAT (meters)	<input type="text" value="148"/> Field (dBu)
<input type="button" value="Find Result"/>	<input type="button" value="Clear Form"/>
<b>Results:</b>	
Calculated Distance = 0.004 km	
Free Space equation used to compute distance.	

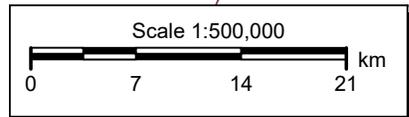
**K278AN**  
Rapid City, SD  
BLFT19991105AAU  
Latitude: 44-04-08 N  
Longitude: 103-15-05 W  
ERP: 0.25 kW  
HAAT: 102.26 m  
Channel: 278  
Frequency: 103.5 MHz  
AMSL Height: 1214.0 m  
Elevation: 1146.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**K280AJ**  
Hill City, SD  
BLFT179  
Latitude: 43-55-38.90 N  
Longitude: 103-34-02.60 W  
ERP: 0.008 kW  
HAAT: -49 m  
Channel: 280  
Frequency: 103.9 MHz  
AMSL Height: 1630.0 m  
Elevation: 1628.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

**Section 74.1204 Contour Protection**  
K280AJ CH280D Hill City, SD



**FCC Contours Legend**  
F(50,50) 60 dBu = Black  
F(50,10) 54 dBu = Red

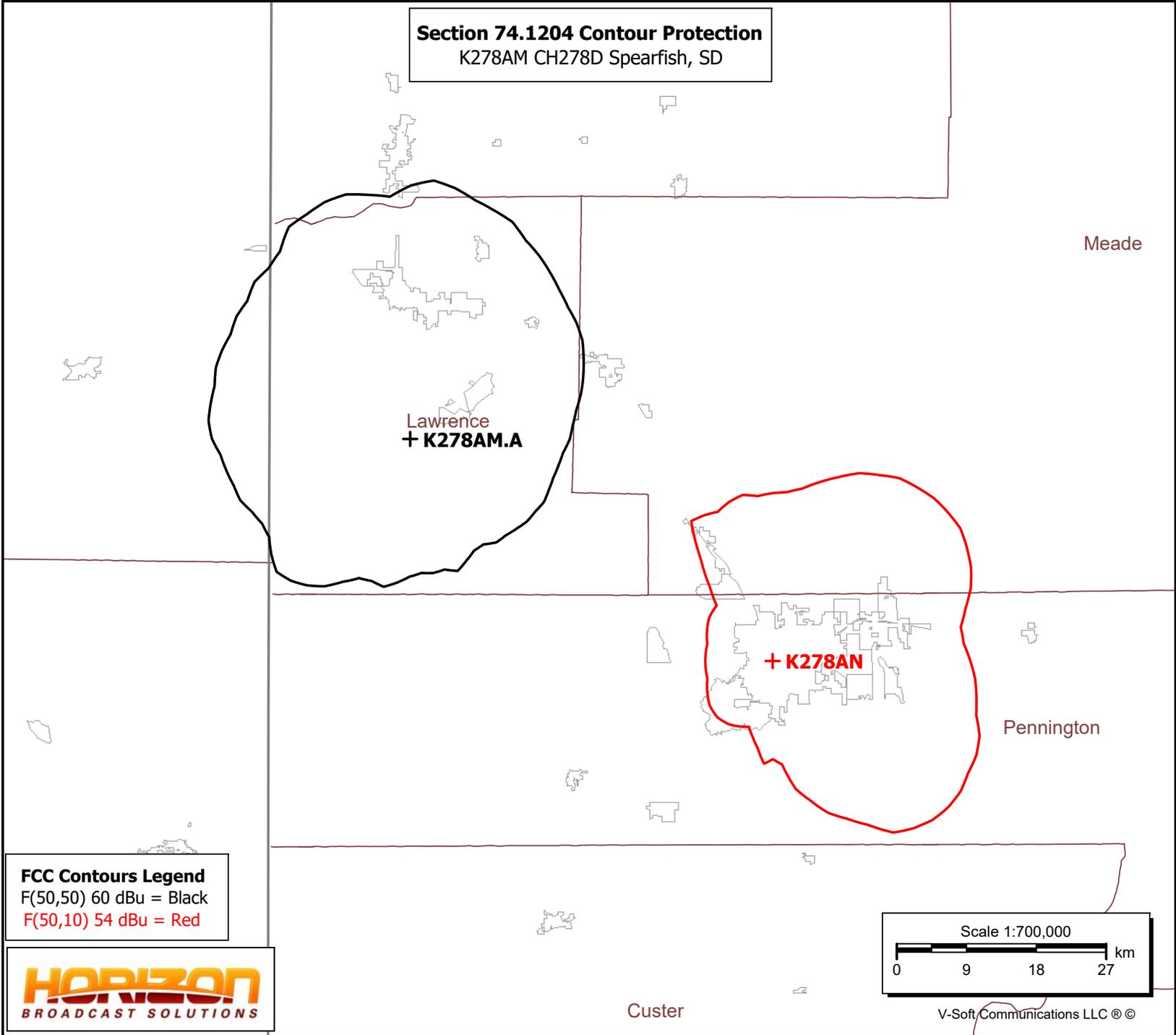


V-Soft Communications LLC ©

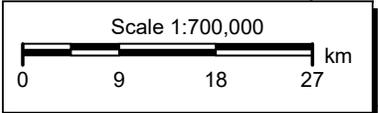
**K278AN**  
Rapid City, SD  
BLFT19991105AAU  
Latitude: 44-04-08 N  
Longitude: 103-15-05 W  
ERP: 458 kW  
HAAT: 102.26 m  
Channel: 278  
Frequency: 103.5 MHz  
AMSL Height: 1214.0 m  
Elevation: 1146.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**K278AM.A**  
Spearfish, SD  
0000151039  
Latitude: 44-19-34.50 N  
Longitude: 103-50-07.90 W  
ERP: 0.25 kW  
HAAT: 102.26 m  
Channel: 278  
Frequency: 103.5 MHz  
AMSL Height: 2179.6 m  
Elevation: 2119.6 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

**Section 74.1204 Contour Protection**  
K278AM CH278D Spearfish, SD



**FCC Contours Legend**  
F(50,50) 60 dBu = Black  
F(50,10) 54 dBu = Red



**Human Exposure to Radiofrequency Electromagnetic Field  
&  
Section 106 Compliance  
(Environmental)**

A study has been made to determine whether this proposal is in compliance with 47 C.F.R. 1.1307 of the Commission's rules and with OET Bulletin #65, dated August 1997, regarding human exposure to radio frequency radiation in the vicinity of broadcast towers. Riverfront Broadcasting LLC seeks to modify FM translator K278AN, Facility ID No. 176775, Rapid City, SD. K278AN will simulcast co-owned primary station KDDX, Channel 266C (101.1 MHz), Facility ID No. 24553, licensed to Spearfish, SD. The K278AN transmit location is a tower 185 meters in overall height and is located at 44° 04' 08" N ~ 103° 15' 05" W (NAD 83). The tower is registered with the Antenna Registration Structure "ASR" number 1042359. The proposed antenna is a Scala Model CA2-FM four antenna array horizontally polarized directional antenna with a center of radiation of 68 meters AGL. K278AN will operate on Channel 279D, 103.7 MHz, with 250 watts ERP directional at 102.26 meters HAAT. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of § 1.1306 of the FCC Rules. Because the proposed new facility proposes to operate from an existing tower and no modifications are being made to the tower, it is believed to be exempt from a Section 106 review by the SHPO/THPO.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number 65. The Scala antenna is not included in the recently revised OET FM Model Program. Therefore, Type 1, Ring-and-stub, or any type not otherwise described was selected. Using this antenna, the maximum calculated signal density near the tower at two meters above ground level attributable to the proposed facility is 0.532  $\mu\text{W}/\text{cm}$  at 38 meters, which is 0.266 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in 1.1307(b) regarding sites with multiple emitters, which excludes applicant from responsibility for taking any corrective action in areas where the proposal's contribution is less than five percent.

The applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

# FM Model

## Radio Frequency Safety

FCC Policy on Human Exposure

RF Safety FAQ

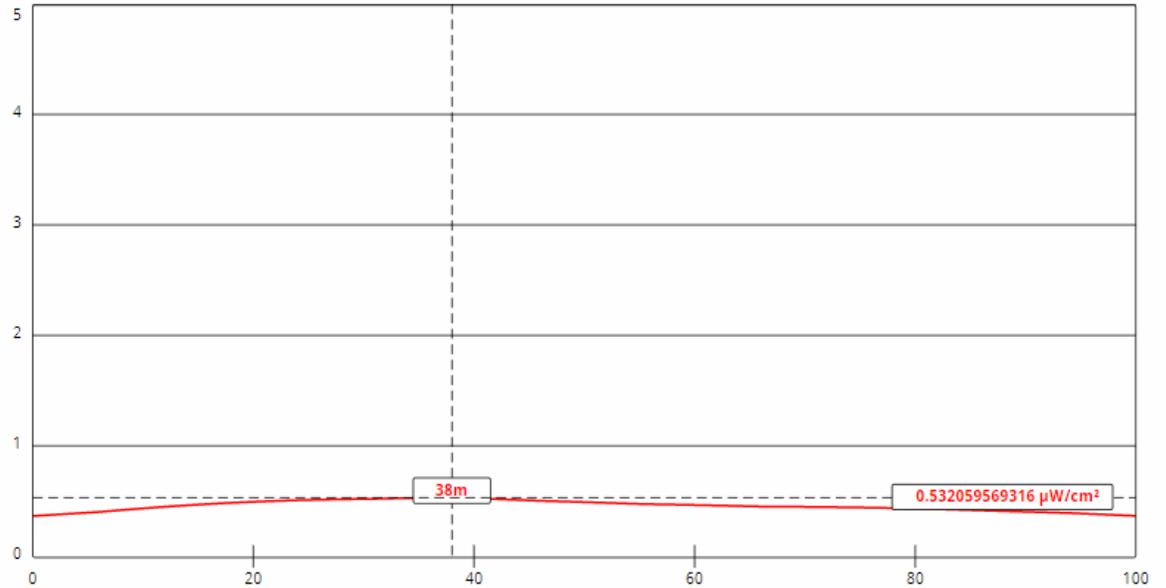
Body Tissue Dielectric Parameters

RF Safety Highlighted Releases

**FM Model**

The FM Model calculator determines the potential exposure from radiofrequency (RF) electromagnetic fields produced by FM broadcast station antennas at ground level. The FM Model software was originally developed by the FCC in 1997 as a standalone executable program and this improved version provides more precise predictions and runs via a JavaScript enabled web browser. The FM Model is originally based on measured data published in 1985 by the EPA.

[▼ Show More....](#)



[View Tabular Results +](#)

Channel Selection	Channel 279 (103.7 MHz) ▼		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	68	Distance (m)	100
ERP-H (W)	250	ERP-V (W)	0
Num of Elements	1	Element Spacing (λ)	1
Num of Points	500	<a href="#">Apply</a>	