

**ENGINEERING REPORT**  
**Minor Modification Construction**  
**Permit Application**

for

**K287BY**  
**Facility ID: 141946**

as an AM Fill-In Translator for  
**KXFN(AM) – St. Louis, MO**

**October 2021**

***MUNN-REESE***

Broadcast Engineering Consultants  
Coldwater, MI 49036

## Discussion

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This firm has been retained to prepare the required engineering report in support of a Minor Modification Construction Permit Application for an FM Translator K287BY. Currently this translator is licensed to operate with an AMSL of 275 meters and an ERP of 0.099 kW (H&V). This proposal requests an AMSL of 370 meters and an ERP of 0.099 kW (H&V) from a new tower site. The Fill-In Translator will rebroadcast Class D Primary Station KXFN(AM) – St. Louis, MO.

The Translator as proposed will be mounted on a tower bearing Antenna Structure Registration Number 1044421.

The proposed 60 dBμ contour of the Fill-In Translator lies wholly inside the greater of the AM primary daytime 2.0 mV/m contour and a 25 mile radius around the AM site. A map of the present and proposed service area has been included in **Exhibit 1.0**.

It has been determined the Translator may be used in the area without interference to any existing FM broadcast station or facility. General allocation details are found in **Exhibit 2.0**. It is believed sufficient clearance exists precluding the need for additional contour protection showings.

Compliance with §74.1204(d) Second/Third Adjacent Channel Given Interference is shown in **Exhibit 2.1**. Protection has been based on the worst case calculated 132 dBμ F(50:10) Interference Contour, corresponding to the worst case 92 dBμ F(50:50) Protected Contour of KTLK-FM – CH285C3, Columbia, IL.

# Exhibit 1.0 - K287BY Present and Proposed

## KXFN.L

Latitude: 38-45-01 N  
Longitude: 090-09-46 W  
ERP: 0.10 kW  
Channel: 201  
Frequency: 1.38 MHz  
AMSL Height: 0.0 m  
Elevation: 0.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

## K287BY

BLFT20170915ACB  
Latitude: 38-36-47.01 N  
Longitude: 090-20-08.98 W  
ERP: 0.099 kW  
Channel: 287  
Frequency: 105.3 MHz  
AMSL Height: 275.0 m  
Elevation: 141.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

## K287BY.P

ASR: 1044421  
Latitude: 38-32-07 N  
Longitude: 090-22-23 W  
ERP: 0.099 kW  
Channel: 287  
Frequency: 105.3 MHz  
AMSL Height: 370.0 m  
Elevation: 182.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

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- K287BY (287)
- K287BY.P (287)
- KXFN.L

Scale 1:1,000,000

0 10 20 30 km

VSoft Communications LLC ©

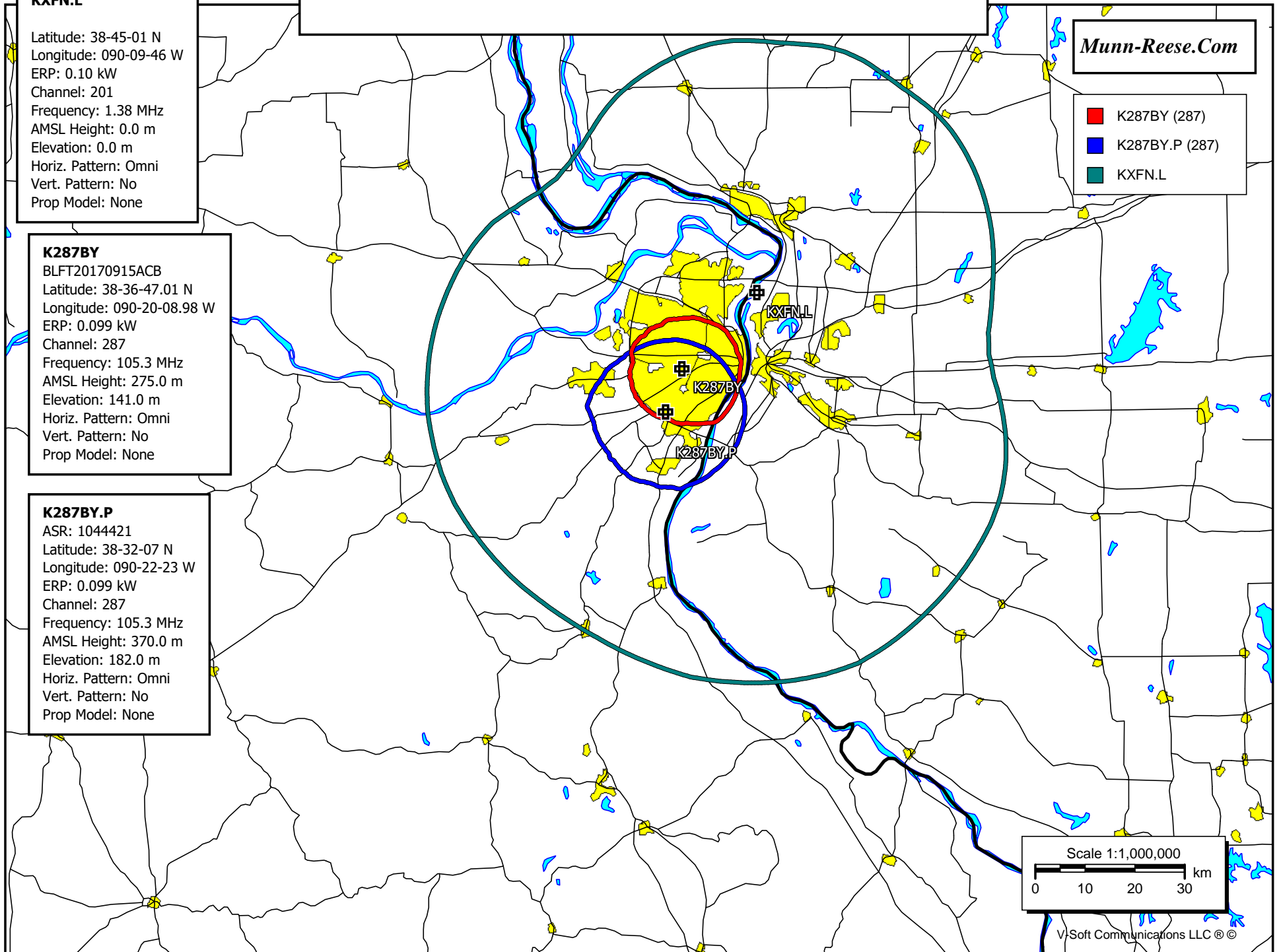
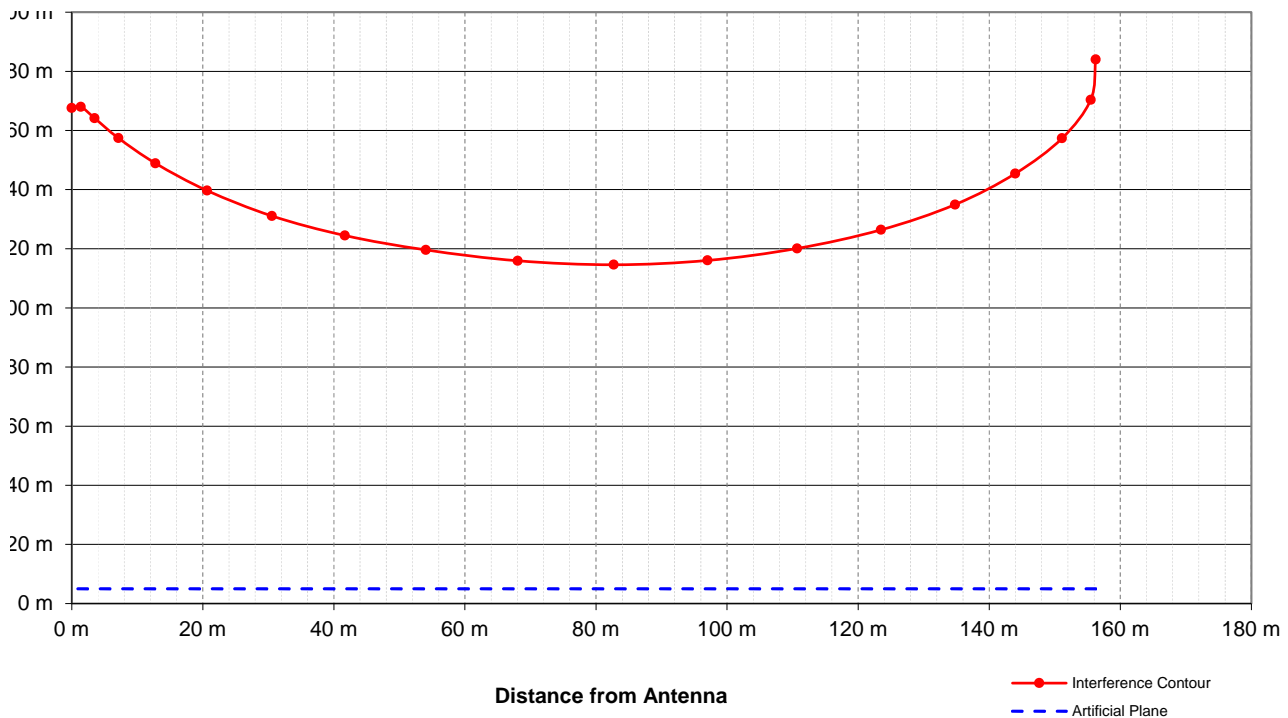


Exhibit 2.0 Relevant Radio, Inc. CH# 287D - 105.3 MHz, Pwr= 0.099 kW, HAAT= 209.9 M, COR= 370 M Average Protected F(50-50)= 14.84 km Omni-directional												DISPLAY DATES DATA 09-21-21 SEARCH 09-27-21	
CH CITY	CALL	TYPE	ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap	*OUT* in km)		
289C1 Collinsville	KPNT	LIC	NCN IL	43.5 223.5	6.00 BLH20130125ABQ	38 34 27.90 90 19 31.90	54.000 254	7.8 407	62.1 St. Louis	-16.9*<	-56.8*< FCC License Sub,		
287D St. Louis	K287BY	LIC	_CN MO	20.4 200.5	9.23 BLFT20170915ACB	38 36 47.20 90 20 09.40	0.099	275	---Reference---	Relevant Radio, Inc.			
287C1 Rolla	KZNN	LIC	_CN MO	239.1 58.2	140.47 BLH19861103KB	37 52 39.10 91 44 45.50	100.000 192	162.8 498	64.6 Kttr-Kznn, Inc.	-36.5*<	29.3		
285C3 Columbia	KTLK-FM	LIC	_CN IL	43.5 223.5	6.00 BLH20130612AAE	38 34 27.90 90 19 31.90	8.400 171	3.8 324	38.5 Ihm Licenses, LLC	-12.8*<	-33.2*<		
287A Staunton	WAOX	LIC	_CN IL	43.5 223.9	78.22 BLH19991206AAL	39 02 37.20 89 44 56.30	6.000 87	86.1 272	27.8 Talley Broadcasting Corpor	-23.0*<	0.7		
287D Ste. Genevieve	K287CE	LIC	_CN MO	155.4 335.6	66.19 0000119485	37 59 37.00 90 03 30.00	0.250	49.1 249	14.7 Donze Communications, Inc	1.8	1.4		
287D Troy	K287CM	LIC	_CN MO	317.9 137.5	68.28 0000086267	38 59 22.20 90 54 11.50	0.250	41.9 242	12.2 Kyro Group, LLC	12.5	10.2		
286D Washington	K286BG	LIC	_CN MO	272.2 91.8	54.97 BLFT20090709AMF	38 33 10.20 91 00 17.50	0.016 13	6.2 191	4.4 Kaspar Broadcasting Co. Of	33.1	26.9		
284D Jerseyville	W284DN	APP	DCN IL	4.8 184.9	64.75 0000152206	39 06 56.10 90 18 35.40	0.250	1.1 245	9.8 Dj Two Rivers Radio, Inc	49.1	54.2		
284D Jerseyville	W284DN	CP	DCN IL	4.8 184.9	64.75 BNPFT20180418AGN	39 06 56.10 90 18 35.40	0.250	1.1 245	9.8 Dj Two Rivers Radio, Inc	49.1	54.2		
286B1 Murphysboro	WTAO-FM	LIC	_CN IL	133.0 313.7	126.52 BLH19920108KF	37 45 15.10 89 19 14.30	25.000 94	52.0 218	37.5 Withers Broadcasting Of So	59.1	61.6		
284A Nashville	WNSV	LIC	_CN IL	96.6 277.3	92.73 BLH20000128AAL	38 26 02.20 89 18 55.30	3.400 134	2.6 278	28.8 Dana Communications Corpor	74.4	63.2		
288A South Jacksonville	WJVO	LIC	_CN IL	6.6 186.7	132.85 BMLH19910514KD	39 43 20.10 90 11 43.40	6.000 100	40.9 291	26.5 Morgan County Media LLC	77.4	84.3		
288D Centralia	W288CO	LIC	_CN IL	89.0 269.8	108.12 BLFT20141112AMJ	38 32 45.10 89 07 47.20	0.080 33	9.5 183	6.6 Pure Word Radio, Inc.	83.0	77.8		
286B Quincy	WGEM-FM	LIC	_CN IL	332.6 152.0	177.73 BLH20090929ALD	39 57 04.20 91 19 53.50	26.500 209	75.9 399	64.1 Gray Television Licensee,	87.9	84.2		
287B Evansville	WJLT	LIC	_CN IN	101.0 282.7	246.31 BLH19971219KF	38 04 45.20 87 36 36.10	50.000 150	135.5 280	62.7 Townsquare Media Of Evansv	95.2	116.6		
288C2 Moberly	KZZT	LIC	_CN MO	302.3 121.2	189.78 BLH20000626AEW	39 26 02.10 92 14 24.60	50.000 150	77.4 384	51.5 Fm105, Inc.	98.0	116.4		

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM  
 Contour distances are on direct line to and from reference station. Reference zone= West Zone, Co to 3rd adjacent.  
 All separation margins (if shown) include rounding.  
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
 "\*"affixed to 'IN' or 'OUT' values = site inside restricted contour.  
 < = Contour Overlap

## Exhibit 2.1 - Downward Radiation Study



**Proposed Antenna:** Opposed V Dipole

**Proposed Power:** 0.099 kW

**Antenna Height AGL:** 184 meters

**Interference Contour:** 113 dBu f(50:10)

**ial Ground Plane Height:** 5 meters

**Free Space Equation:**  $= (10^{((106.92 - [\text{desired dBu}] + [\text{ERP in dBk}]) / 20)) * 1000$

**Strength (dBu) Equation:**  $= 106.92 - (20 * (\text{LOG}_{10}[\text{DistMeters} / 1000])) + [\text{ERP in dBk}]$

Antenna			Distance		Field Strength	Distance	Field Strength
Relative	ERP	ERP	from Ant.	Distance	in dBu @	from Ant.	Field Strength
Field	in kW	in dBk	to Interference	from Ant. to	Artificial Plane	to Ground Level	in dBu @
			Contour	Artificial Plane			Ground Level
1.000	0.099	-10.04	156.25 m	infinite	---	---	---
0.999	0.099	-10.05	156.09 m	2053.79 m	90.62 dBu	2111.16 m	90.38 dBu
0.982	0.095	-10.20	153.44 m	1030.82 m	96.45 dBu	1059.61 m	96.22 dBu
0.954	0.090	-10.45	149.06 m	691.60 m	99.67 dBu	710.92 m	99.43 dBu
0.918	0.083	-10.79	143.44 m	523.36 m	101.76 dBu	537.98 m	101.52 dBu
0.872	0.075	-11.23	136.25 m	423.55 m	103.15 dBu	435.38 m	102.91 dBu
0.818	0.066	-11.79	127.81 m	358.00 m	104.05 dBu	368.00 m	103.81 dBu
0.758	0.057	-12.45	118.44 m	312.08 m	104.58 dBu	320.79 m	104.35 dBu
0.691	0.047	-13.25	107.97 m	278.47 m	104.77 dBu	286.25 m	104.53 dBu
0.616	0.038	-14.25	96.25 m	253.14 m	104.60 dBu	260.22 m	104.36 dBu
0.538	0.029	-15.43	84.06 m	233.67 m	104.12 dBu	240.19 m	103.88 dBu
0.465	0.021	-16.69	72.66 m	218.52 m	103.44 dBu	224.62 m	103.20 dBu
0.391	0.015	-18.20	61.09 m	206.69 m	102.41 dBu	212.46 m	102.17 dBu
0.313	0.010	-20.13	48.91 m	197.50 m	100.88 dBu	203.02 m	100.64 dBu
0.239	0.006	-22.48	37.34 m	190.49 m	98.85 dBu	195.81 m	98.61 dBu
0.176	0.003	-25.13	27.50 m	185.31 m	96.43 dBu	190.49 m	96.19 dBu
0.129	0.002	-27.83	20.16 m	181.76 m	93.90 dBu	186.84 m	93.66 dBu
0.103	0.001	-29.79	16.09 m	179.68 m	92.04 dBu	184.70 m	91.80 dBu
0.105	0.001	-29.62	16.41 m	179.00 m	92.24 dBu	184.00 m	#NAME?