Comprehensive Technical Statement

K295CQ, FCC Facility ID # 142045, St. Louis, MO
Fusion Radio LLC, Licensee
Minor Modification

Introduction

The following changes are proposed:

- Channel (non-adjacent channel 231 – interference reduction statement included)
- Directional antenna pattern

AM Improvement 250-Mile Window Translator

The translator that is the subject of this application was relocated under the AM Improvement 250-mile translator window to rebroadcast WGNU, St. Louis, FCC Facility ID # 49042. Special operating condition # 1 requires that the translator is to be paired with WGNU for a period of four years of actual operation.

Operations commenced on or about the date of the license application, February 15, 2017, and continued until August 18, 2021.

The four-year commitment was satisfied on or about February 15, 2021, and the translator is free to rebroadcast another primary station.

Data Sources

All contours shown in this report were generated using antenna center above mean sea level, NAD-83 coordinates, and the FCC Contours API using the NED-1 terrain dataset.

Dates shown on the maps represent the last change date in the LMS downloads in use at the time this statement was prepared.

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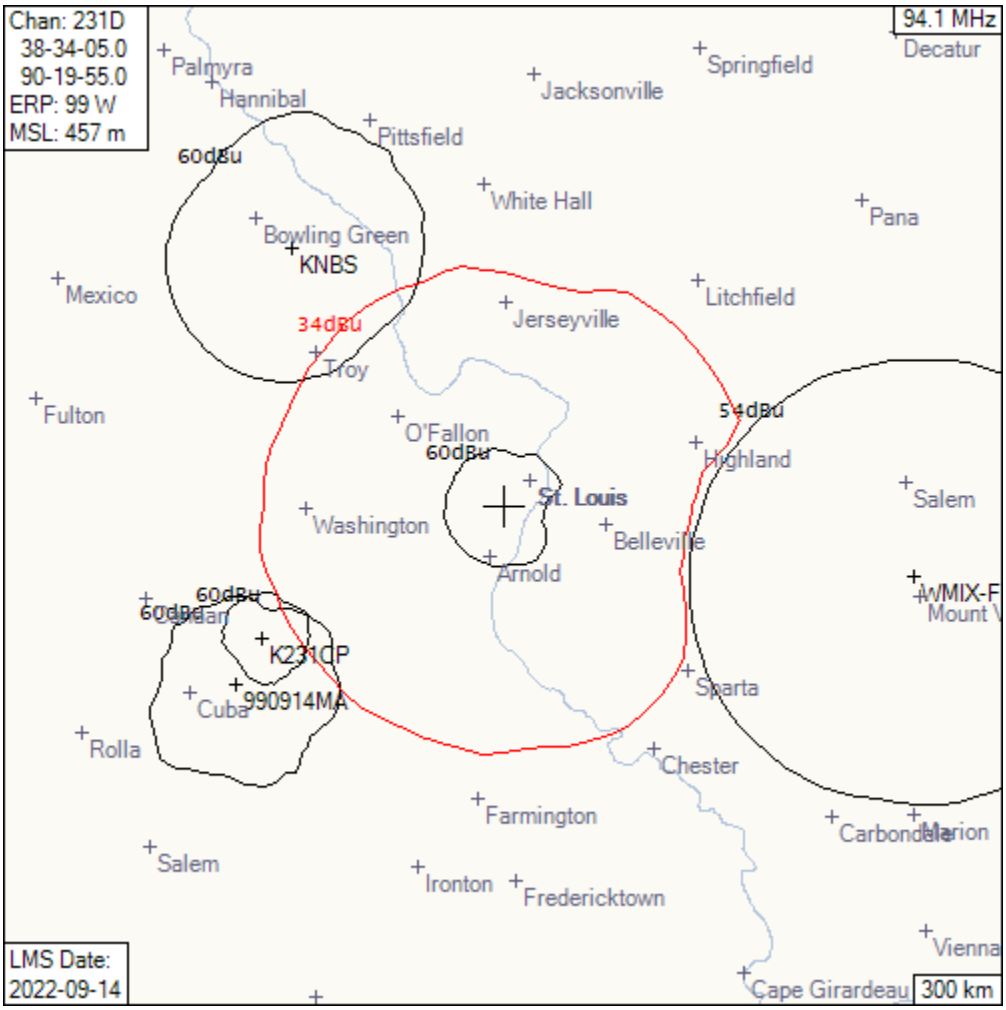
Detailed Interference Study

The following collection of maps and the narrative accompanying each show that no prohibited overlap would occur between the proposed facility and any potentially conflicting co-channel or first-adjacent facility or proposal. Interfering f(50,10) contours are shown as red polygons, and protected f(50,50) contours are shown as black polygons.

Map 1a – Co-channel Outbound Interference

WMIX-FM is protected to the 54 dBu f(50,50) contour:



There is no overlap between the proposed 34 dBu f(50,10) contour and the protected WMIX-FM 54 dBu f(50,50) contour.

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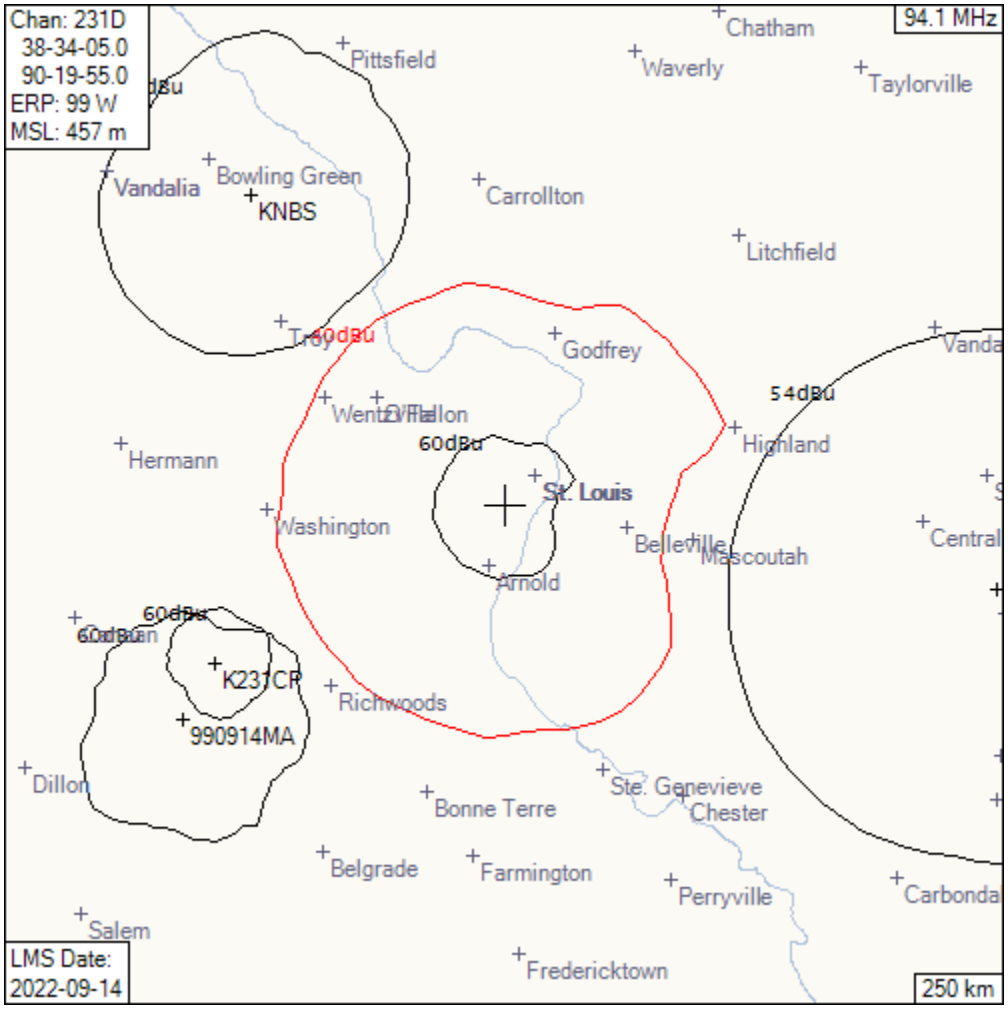
Map 1b – Co-channel Outbound Interference

KNBS, K231CP, and vacant allotment 990914MA are protected to the 60 dBu contour:



The proposed 40 dBu f(50,10) contour does not overlap any of the protected 60 dBu f(50,50) contours.

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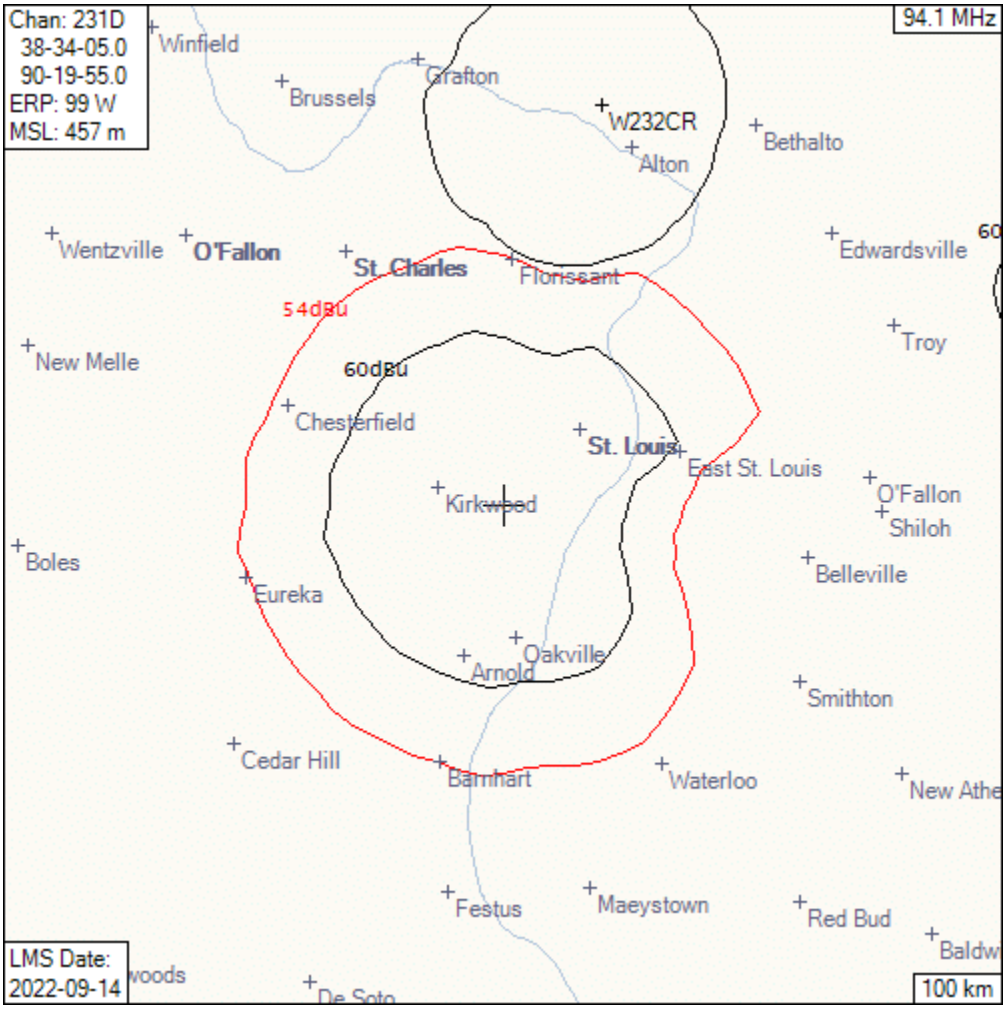
Map 2 – First Adjacent Outbound Interference



The only nearby first-adjacent conflict is W232CR.

The proposed 54 dBu f(50,10) contour does not overlap the W232CR protected 60 dBu f(50,50) contour.

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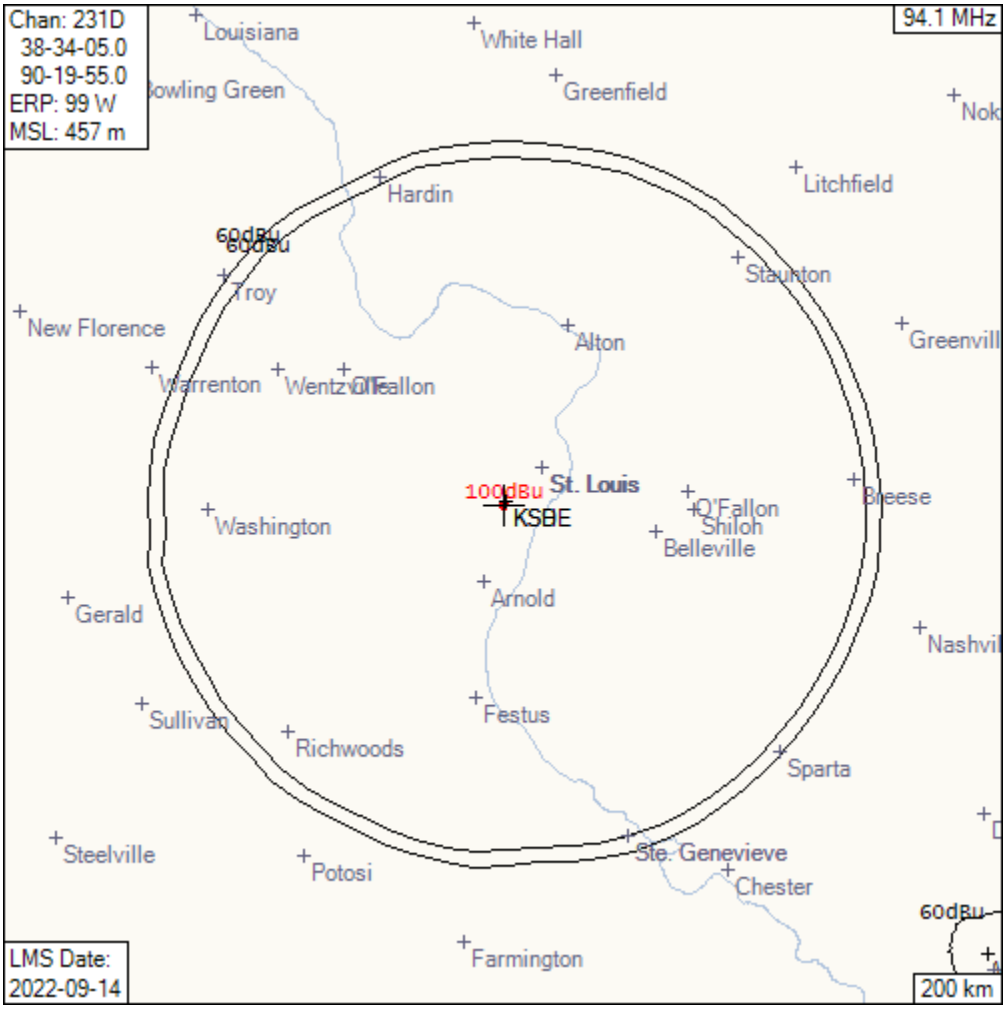
Map 3 – Second/Third Adjacent Outbound Interference Detail



The proposed site is within the protected contours of second-adjacent KSD and third-adjacent KSHE. These stations share a community antenna located 0.9 km from the proposed site.

KSHE is licensed for 100 kW and KSD for 74 kW. Given the proposed 99 W ERP, the sites are effectively co-located. The distance is well below the minimum distances on the FCC contour curves, and only free-space analysis works.

KSD has the lower ERP at 74 kW. The KSD free-space signal at the proposed location is 126.54 dBu, and the interfering signal is 166.54 dBu.

At the proposed 99 W ERP, the free-space distance to the proposed 166.54 dBu is 0.3 m. The antenna will be mounted 305 m above the ground.

It is self-evident that the interfering signal will not occur in any populated area.

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IF Separation requirements

There are no IF separation requirements with respect to proposals with less than 100 W ERP.

Channel 6 Interference

The proposed facility is not on a channel that is implicated in channel 6 interference.

International

The FM Agreements with Canada and Mexico require evaluation and potential coordination of any proposal within 320 km of the border.

The distance to the nearest point along the US/Canada border is 716 km. Coordination with Canada is not required.

The distance to the nearest point along the US/Mexico border is 1,409 km. Coordination with Mexico is not required.

Quiet Zones

The proposed site is outside the National Radio Quiet Zone (National Radio Astronomy Observatory Notification Area) in West Virginia.

The proposed site is outside the Arecibo Observatory notification area in Puerto Rico.

The proposed site is not within a 100 km extension of the Table Mountain Radio Receiving Zone in Colorado.

Protected Monitoring Stations

The nearest Protected Monitoring Station is 581 km distant, in Allegan, MI. This is well beyond any potential 80 dBu contour.

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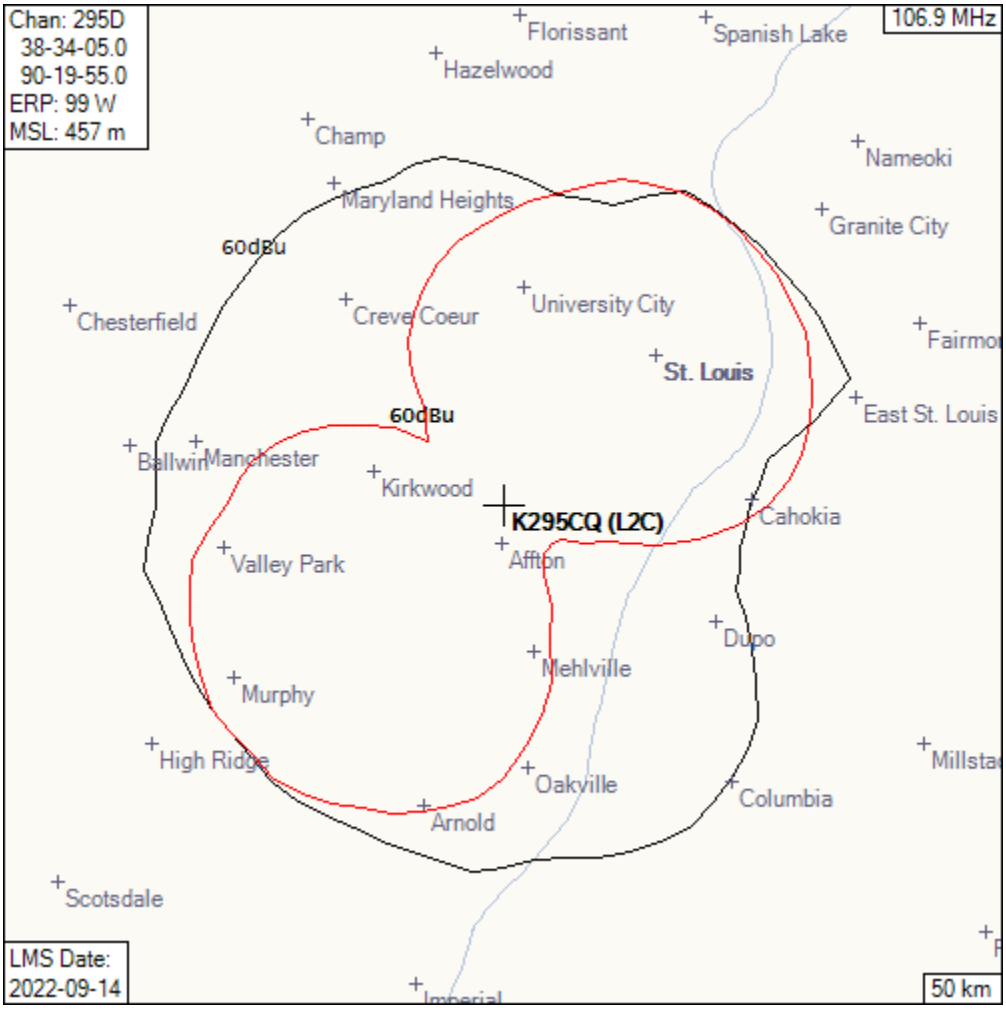
Minor Change



The 60 dBu f(50,50) contour of the proposed facility is shown as a black polygon.

The 60 dBu f(50,50) contour of the current license is shown as a red polygon.

The proposal satisfies the first test of the minor change requirements, that there must be overlap between the licensed and proposed 60 dBu contours.

The proposal involves a non-adjacent frequency change. Justification in the form of a showing of reduced interference is required.

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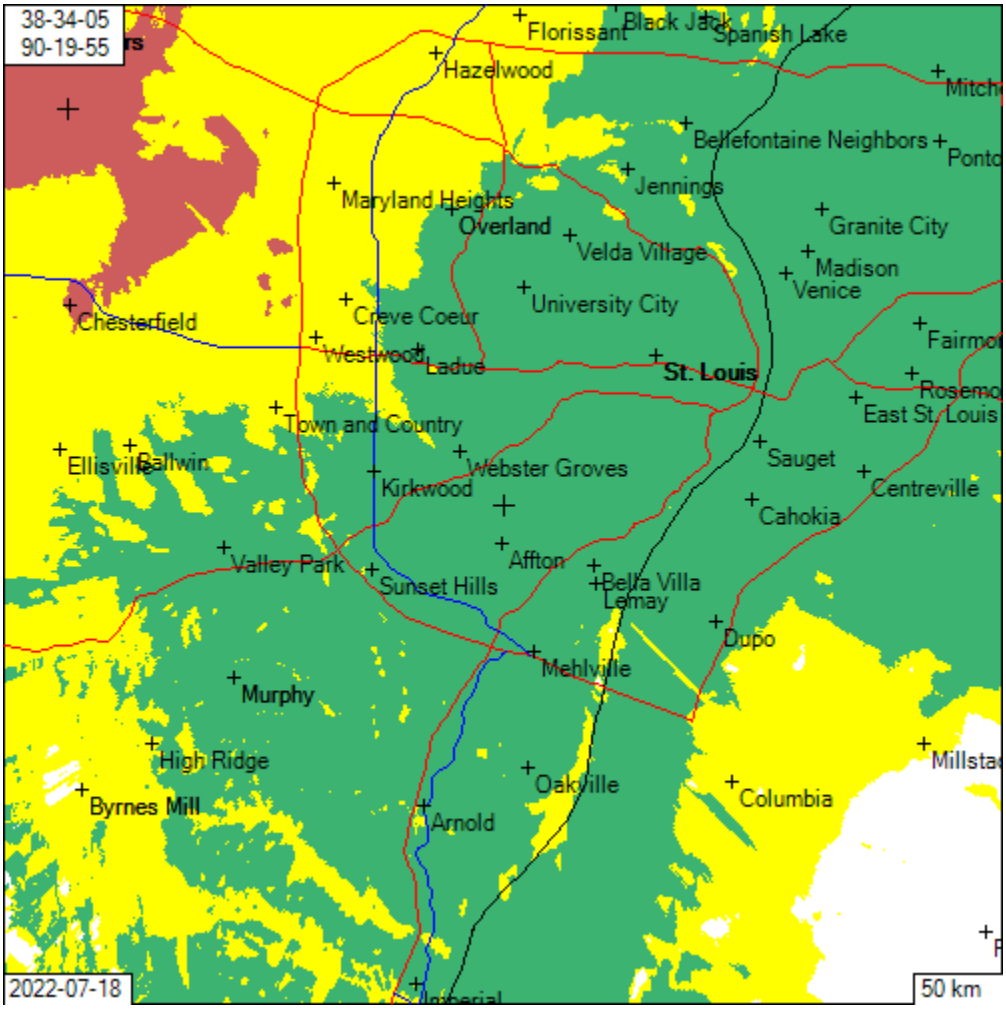
The current facility is experiencing interference from several sources, predominantly KWEC-LP:



This is a Point-To-Point (PTP) model of expected coverage in the area.

Green areas are where K295CQ is expected to be interference-free.

Red areas are where KWEC-LP is expected to be interference-free.

Yellow indicates areas where the stations are expected to interfere with each other.

Additional contributors to the yellow interference areas are KTXY and WDML.

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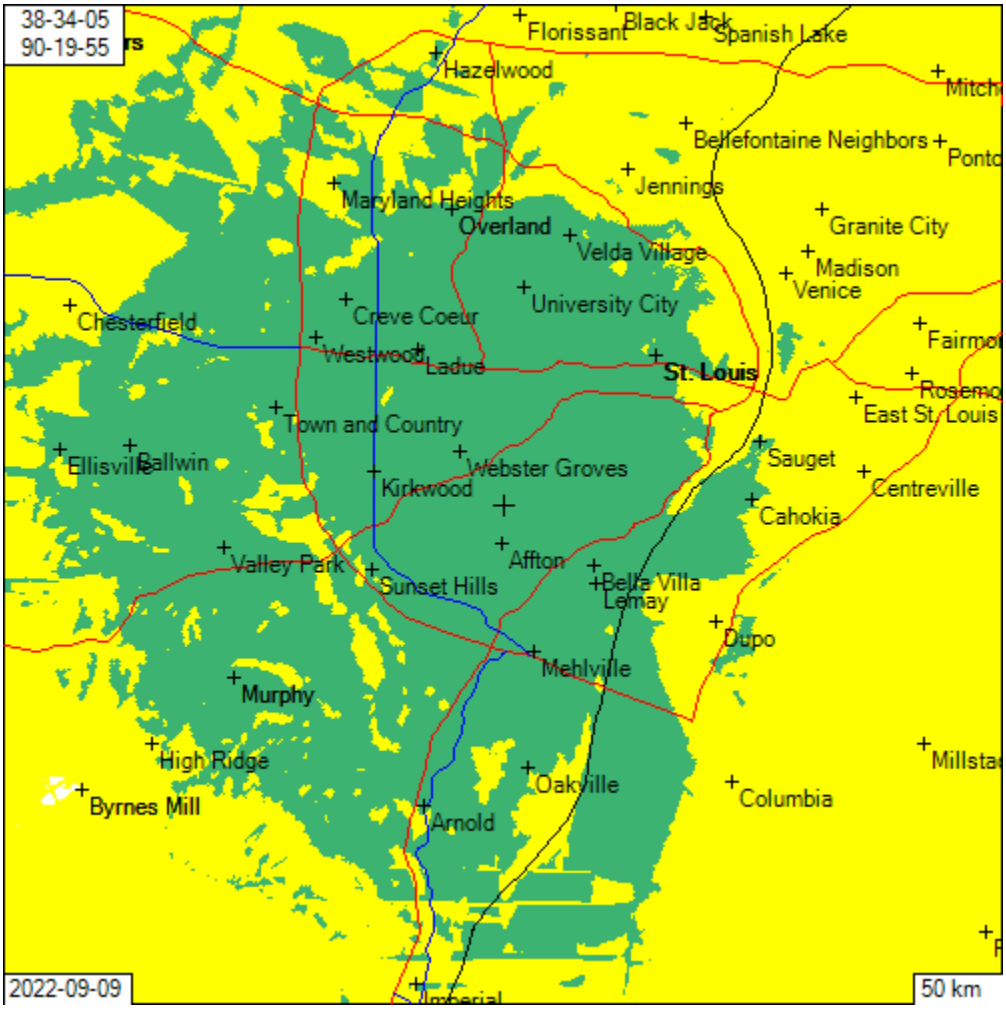
The proposed facility will receive much less interference:



Contributing interference sources are WMIX-FM, KNBS, and K231CP.

Conclusion

It is clear from the PTP plots that the proposed signal would receive much less interference in the areas to the northwest, particularly in Creve Coeur, Westwood, and Town and Country, communities with a total population of 28,926.

Therefore, it is respectfully submitted that the proposal would result in a reduction of interference to K295CQ.

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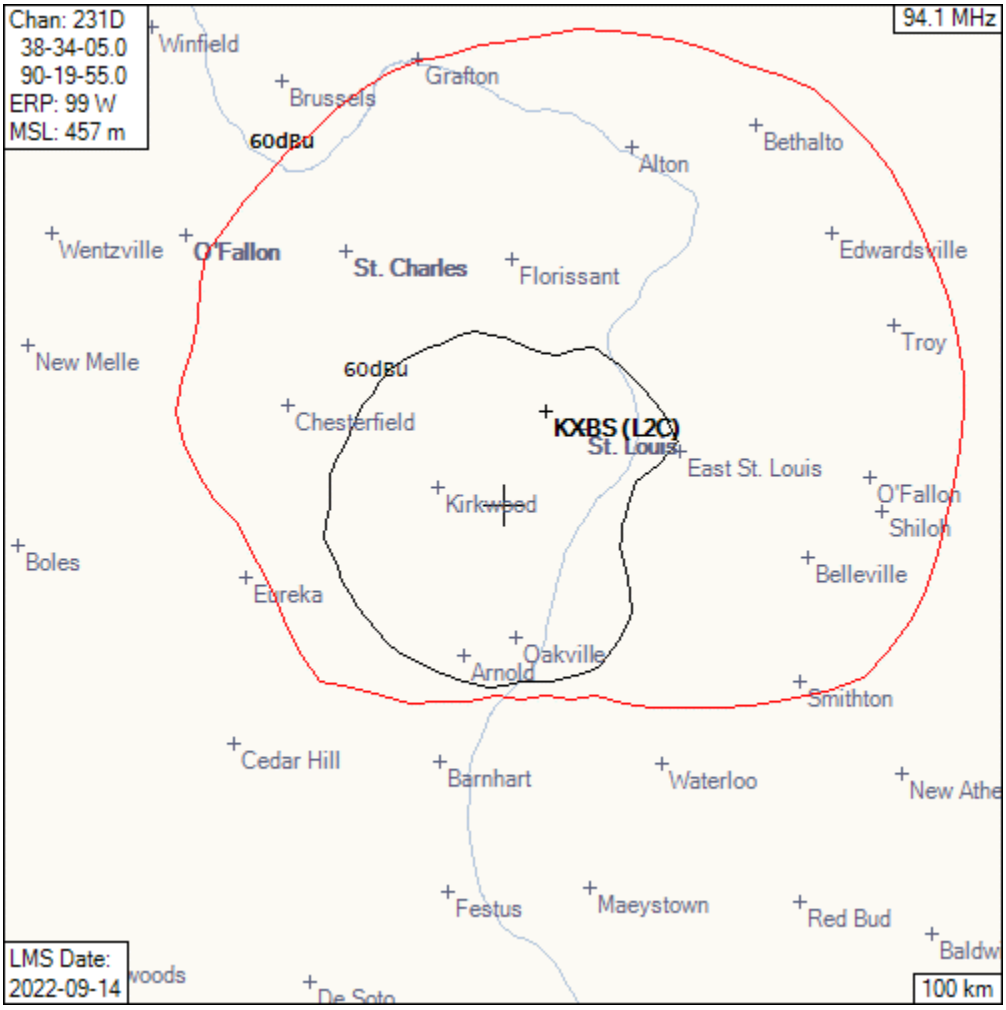
Fill-In Translator

The proposed primary station is KXBS (HD3), Bethalto, IL, FCC Facility ID # 4948.



The proposed 60 dBu f(50,50) contour is shown as a black polygon.

The KXBS 60 dBu f(50,50) contour is shown as a red polygon.

The proposed 60 dBu f(50,50) contour falls entirely within the primary station's 60 dBu f(50,50) contour. A rebroadcast consent agreement exists. The proposal therefore qualifies as fill-in service.

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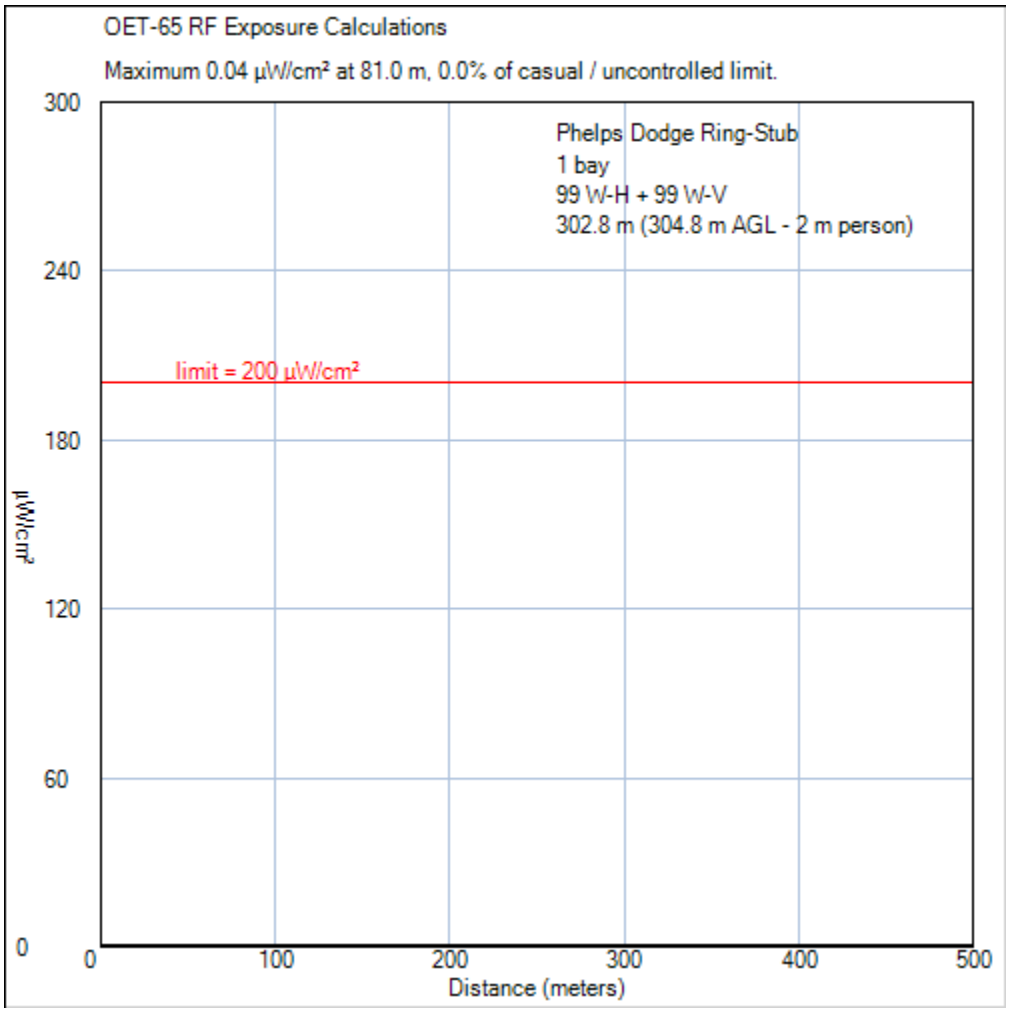
Environmental

The proposed site is an existing tower, ASR # 1001160. No construction, excavation, or increase to the height of the tower is proposed.

The proposed effective radiated power is 99 W-H + 99 W-V. The one-level antenna will be mounted 304.8 m above ground level.

Assuming the worst-case EPA Type 1 “Ring-Stub” antenna model, the OET-65 algorithm returns a maximum exposure of less than 1% of the limit for casual / uncontrolled exposure:



Appropriate access controls and safety signage are provided. The applicant agrees to coordinate with other users of the site to reduce power or shut down in order to protect workers at the site.

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LMS Engineering Data

Channel	231	
Coordinates (NAD-83)	38 34 05.0 N Lat 90 19 55.0 W Lon	
ASR	1001160	
Overall Tower Height AGL	350.2 m	
Site Elevation AMSL	152.1 m	
Radiation Center AGL	304.8 m	
Effective Radiated Power	99 W-H + 99 W-V	
Antenna type	Directional	
Primary Station	Call Sign	KXBS (HD3)
	Facility ID	4948
	City, State	Bethalto, IL
Delivery Method	Other (Terrestrial) or as appropriate	
Antenna		
Manufacturer	Shively	
Model	SLV	
# Sections	1	
Section spacing	1	

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Directional Pattern

az	eRel	az	eRel	az	eRel	az	eRel
0	0.900	90	0.430	180	1.000	270	1.000
10	0.800	100	0.400	190	1.000	280	1.000
20	0.800	110	0.440	200	1.000	290	1.000
30	1.000	120	0.600	210	1.000	300	1.000
40	1.000	130	0.800	220	1.000	310	1.000
50	1.000	140	0.900	230	1.000	320	1.000
60	1.000	150	1.000	240	1.000	330	1.000
70	1.000	160	1.000	250	1.000	340	1.000
80	0.520	170	1.000	260	1.000	350	1.000

Antenna Description

The antenna system will consist of a Shively Labs Model SLV “Versa2une” antenna with parasitic elements to achieve the required pattern.

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