

TECHNICAL NARRATIVE

**Modify FM Translator K284CH
Channel 284D - 104.7 MHz 0.052 kW - Kansas City, MO
to
Proposed CH 284D – 104.7 MHz – 0.099 kW – Kansas City, MO**

May 1, 2022

This Technical Narrative and attached exhibits were prepared on behalf of Alpine Broadcasting Corporation, (“Alpine”). Alpine is the licensee of K284CH, Facility ID Number 153375, Kansas City, Missouri.

Alpine proposes to modify K284CH by co-locating to the antenna currently broadcasting K295CH, Kansas City, MO. Alpine is modifying K284CH by moving to a different existing antenna on the same tower where it is currently licensed. The proposed K284CH would diplex its signal with co-owned FM translator K295CH, Facility ID No. 36259, Kansas City, KS. The modified K284CH will be used as a fill-in translator for KCXL(AM), 1140 kHz, Facility ID Number 1162, licensed to Liberty, Missouri. Alpine is also the licensee of KCXL(AM).

The proposed K284CH is located at 39° 00' 56.5" North Latitude, 94° 30' 25.0" West Longitude (NAD 27). The transmit location is an existing tower, 335.9 meters in overall height. The tower is registered with Antenna Structure Registration (ASR) number 1003006. K284CH would operate with 99 watts ERP directional at 279 meters height above ground level and 277.09 meters HAAT.

An exhibit demonstrates compliance with FCC Section 74.1201(g). The proposed K284CH FCC F(50,50) 60 dBu contour is contained inside the primary station KCXL(AM) 2.0 mV/m daytime contour.

A channel study using Section 73.207 spacings for Class A FM stations is included as an exhibit. The channel study is provided as a convenience to FCC staff. FCC Section 74.1204 contour protection exhibits are included for second adjacent full power FM stations KBEQ-FM, Channel 282C0, Kansas City, MO and KCJK, Channel 286C1, Garden City, MO, co-channel full power FM station KRES, Channel 284C, Moberly, MO, co-channel FM translator K284BS, Channel 284D, Lawrence, KS, co-channel full power FM station KVCY, Channel 284C3, Fort Scott, KS and full power FM station KXBZ, Channel 284C2, Manhattan, KS.

KOJH-LP, Channel 284L1, Kansas City, MO was granted construction permit 0000189072 on April 13, 2022. Alpine respectfully requests this K284CH minor modification application be held in queue until KOJH-LP has commenced operation on Channel 263L1.

Because there is no change in the transmit location an exhibit showing compliance with Section 74.1233(a) "Common Overlap" is not included.

A study has been undertaken to show the proposed K284CH facility is in compliance with the Commission's radio frequency emission limits and are attached as exhibits.

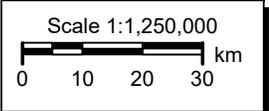
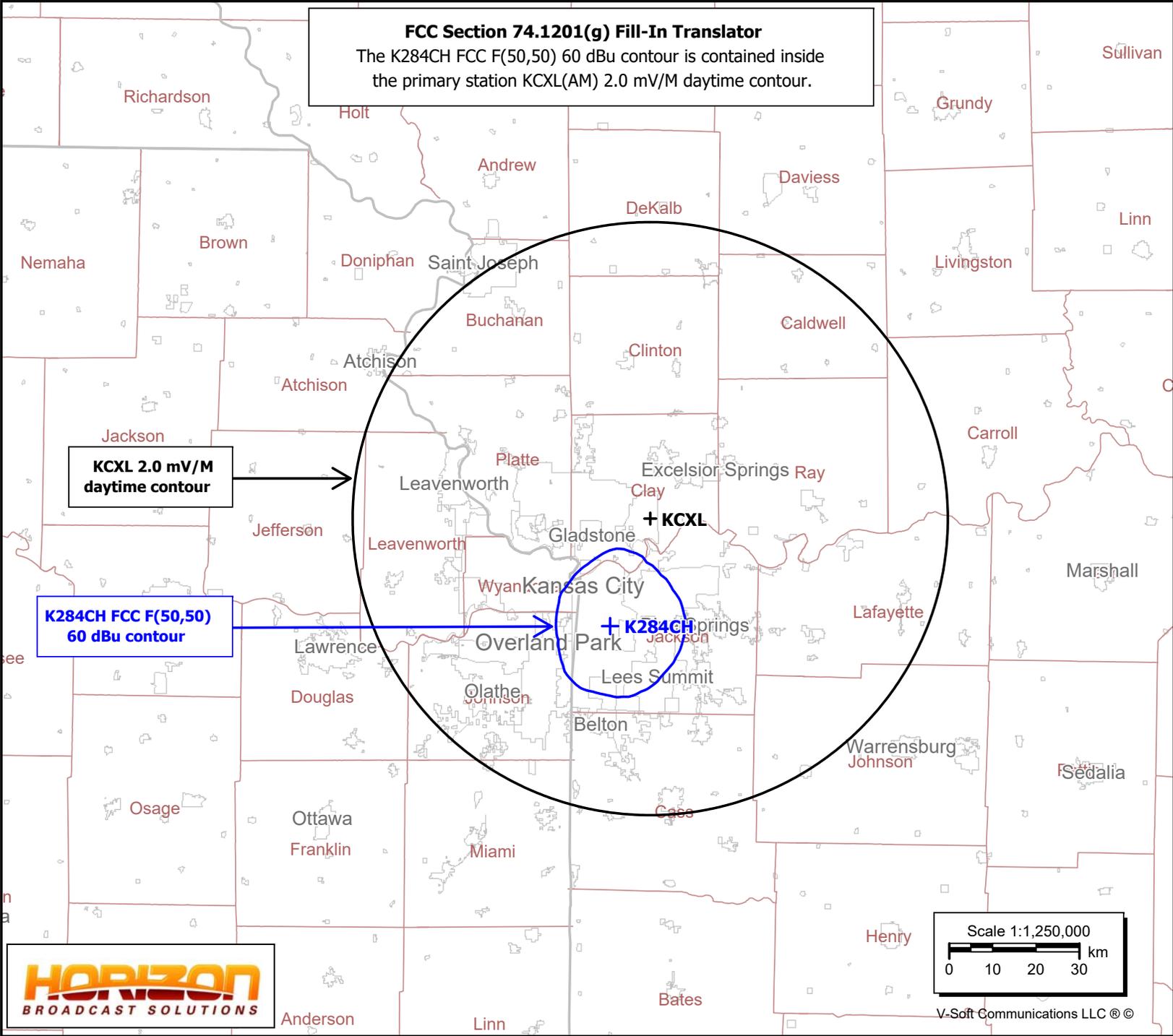
K284CH
Kansas City, KS
BLFT20180521AAS
Latitude: 39-00-56.50 N
Longitude: 094-30-25 W
ERP: 0.099 kW
HAAT: 277.02
Channel: 284
Frequency: 104.7 MHz
AMSL Height: 550.3 m
Elevation: 271.3 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

KCXL
Liberty, MO
Type: AM
Channel: 1140
Power: 4.0 kW Daytime
Latitude: 39-14-18 N
Longitude: 094-23-59 W

FCC Section 74.1201(g) Fill-In Translator
The K284CH FCC F(50,50) 60 dBu contour is contained inside the primary station KCXL(AM) 2.0 mV/M daytime contour.

KCXL 2.0 mV/M daytime contour

K284CH FCC F(50,50) 60 dBu contour



V-Soft Communications LLC ©

K284CH Channel Study

REFERENCE						DISPLAY DATES		
39 00 56.5 N.				CLASS = A	Int = AA		DATA	04-30-22
94 30 25.0 W.				Current Spacings to 3rd Adj.			SEARCH	04-30-22
----- Channel 284 - 104.7 MHz -----								
Call	Channel	Location		Azi	Dist	FCC	Margin	
Lat.	Lng.	Ant	Power		HAAT			

K284CH	LIC-D 284D	Kansas City		MO 0.0	0.0	84.5	-84.5	
39 00 56.5	94 30 25.0	DVN		0.099 kW	0 M			
	Alpine Broadcasting Corpor			BLFT20161108AAA				
KBEQ-FM	LIC 282C0	Kansas City		MO 16.9	7.8	85.5	-77.7	
39 04 59.0	94 28 49.8	CN		100.000 kW	301 M			
	Mgtf Media Company, LLC			BLH19850813KT				
Note: See Section 74.1202 Contour Protection: KBEQ-FM & KCJK								
KCJK	LIC 286C1	Garden City		MO 20.0	8.8	74.5	-65.7	
39 05 26.0	94 28 18.8	CN		72.000 kW	346 M			
	Cmp Houston-Kc, LLC			BLH20120515AFS				
Note: See Section 74.1202 Contour Protection: KBEQ-FM & KCJK								
KRES	LIC 284C	Moberly		MO 71.8	163.4	225.5	-62.1	
39 27 35.1	92 42 07.6	CN		100.000 kW	311 M			
	Alpha Media Licensee LLC			BLH19830124BA				
Note: See Section 74.1202 Contour Protection: KRES, K284BS, KVCY & KXBZ								
KOJH-LP	LIC 284L1	Kansas City		MO 330.7	11.2	66.5	-55.3	
39 06 11.7	94 34 13.4	CN		0.033 kW	52 M			
	Mutual Musicians Foundatio			BLL20171208AAY				
Note: KOJH-FM was granted CP 0000189072 for CH263L1 on 04/13/2022								
K284BS	LIC 284D	Lawrence		KS 257.2	59.4	84.5	-25.1	
38 53 46.0	95 10 30.0	CN		0.050 kW	0 M			
	Footprint Radio Broadcasti			BLFT20190429AAZ				
Note: See Section 74.1202 Contour Protection: KRES, K284BS, KVCY & KXBZ								
KFKF-FM	LIC 231C0	Kansas City		KS 16.4	0.0	24.5	-24.5	
39 00 57.0	94 30 24.8	CN		100.000 kW	303 M			
	Mgtf Media Company, LLC			BLH19870507LI				
Note: Licensee acknowledges 99 watt ERP Limit due to IF spacing to KFKF-FM								
KVCY	LIC 284C3	Fort Scott		KS 188.6	127.6	141.5	-13.9	
37 52 43.1	94 43 24.9	CN		16.000 kW	125 M			
	Vcy AMerica, Inc.			BLED19970929KE				
Note: See Section 74.1202 Contour Protection: KRES, K284BS, KVCY & KXBZ								
KXBZ	LIC-Z 284C2	Manhattan		KS 279.9	171.6	165.5	6.2	
39 15 54.8	96 27 58.5	ZCN		50.000 kW	149 M			
	Manhattan Broadcasting Co.			BMLH20111114BIR				
Note: See Section 74.1202 Contour Protection: KRES, K284BS, KVCY & KXBZ								
KXEA	LIC-N 285A	Lowry City		MO 142.3	120.9	71.5	49.4	
38 09 08.1	93 39 43.8	NCN		1.100 kW	127 M			
	Radford Media Group, LLC			BLH20100616ACP				

Section 74.1204 Contour Protection KBQ-FM and KCJK

This comprehensive exhibit has been prepared to demonstrate that the K284CH modification will not cause prohibited interference to KCJK, Channel 286C1, Garden City, Missouri or KBQ-FM, Channel 282C0, Kansas City, Missouri. This statement demonstrates that a lack of population and/or other factors allow this proposal to be compliant with Section 74.1204. The process commonly called "Living Way," allows for the use of U/D Analysis, also known as "signal strength ratio methodology." In this instant case the facilities to be protected are second adjacent and are afforded protection from signals 40 dB stronger than they present in the location of the proposed antenna location.

The KBQ-FM F(50,50) protected contour at the K284CH application site is 103.8 dBu. Therefore, the K284CH F(50,10) interfering contour with respect to KBQ-FM is the 143.8 dBu contour. The KCJK F(50,50) protected contour at the K284CH application site is 101.7 dBu. Therefore, the K284CH F(50,10) interfering contour with respect to KCJK is the 141.6 dBu contour. Because K284CH will cause greater interference to KCJK, the KCJK interference will be calculated to determine Section 74.1204 contour protection for both stations. Using the FCC's FM propagation curves program (see attached) the 141.6 dBu contour was calculated to extend just 6 meters from the K284CH antenna. The K284CH transmit antenna will be located 279 meters above ground level on an existing guyed tower. There are no high rise buildings in the area of the tower. The interfering contour does not reach the ground. It is believed that K284CH is in compliance with FCC Section 74.1204 contour protection with respect to KCJK.

K284CH

Kansas City, MO
Latitude: 39-00-56.50 N
Longitude: 094-30-25 W
ERP: 0.099 kW
HAAT: 277.09
Channel: 284
Frequency: 104.7 MHz
AMSL Height: 550.3 m
Elevation: 271.3 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: FCC Model
Loc. Variability: 50.0%
Time Variability: 50.0%
HAAT Mthd: FCC

KBEQ-FM

Kansas City, MO
BLH19850813KT
Latitude: 39-04-59 N
Longitude: 094-28-49.80 W
ERP: 100.00 kW
HAAT: 301.0
Channel: 282
Frequency: 104.3 MHz
AMSL Height: 562.0 m
Elevation: 252.0 m
Horiz. Pattern: Omni
Vert. Pattern: No

KCJK

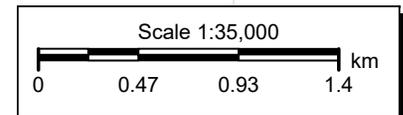
Garden City, MO
BLH20120515AFS
Latitude: 39-05-26 N
Longitude: 094-28-18.80 W
ERP: 72.00 kW
HAAT: 346.0
Channel: 286
Frequency: 105.1 MHz
AMSL Height: 610.0 m
Elevation: 269.0 m
Horiz. Pattern: Omni
Vert. Pattern: No

Section 74.1204 Contour Protection
KBEQ-FM Channel 284C0 Kansas City, Missouri
KCJK Channel 286C1 Garden City, Missouri

KBEQ-FM FCC F(50,50)
103.8 dBU contour

KCJK FCC F(50,50)
101.6 dBU contour

+K284CH



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

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=".099"/> ERP (kW)	<input type="text" value=""/> Distance (km)
<input type="text" value="277.09"/> HAAT (meters)	<input type="text" value="141.06"/> Field (dBu)
<input type="button" value="Find Result"/>	<input type="button" value="Clear Form"/>
Results:	
Calculated Distance = 0.006 km Free Space equation used to compute distance.	

K284CH
 Kansas City, MO
 Latitude: 39-00-56.50 N
 Longitude: 094-30-25 W
 ERP: 0.099 kW
 HAAT: 277.09
 Channel: 284
 Frequency: 104.7 MHz
 Antenna Pattern: Directional

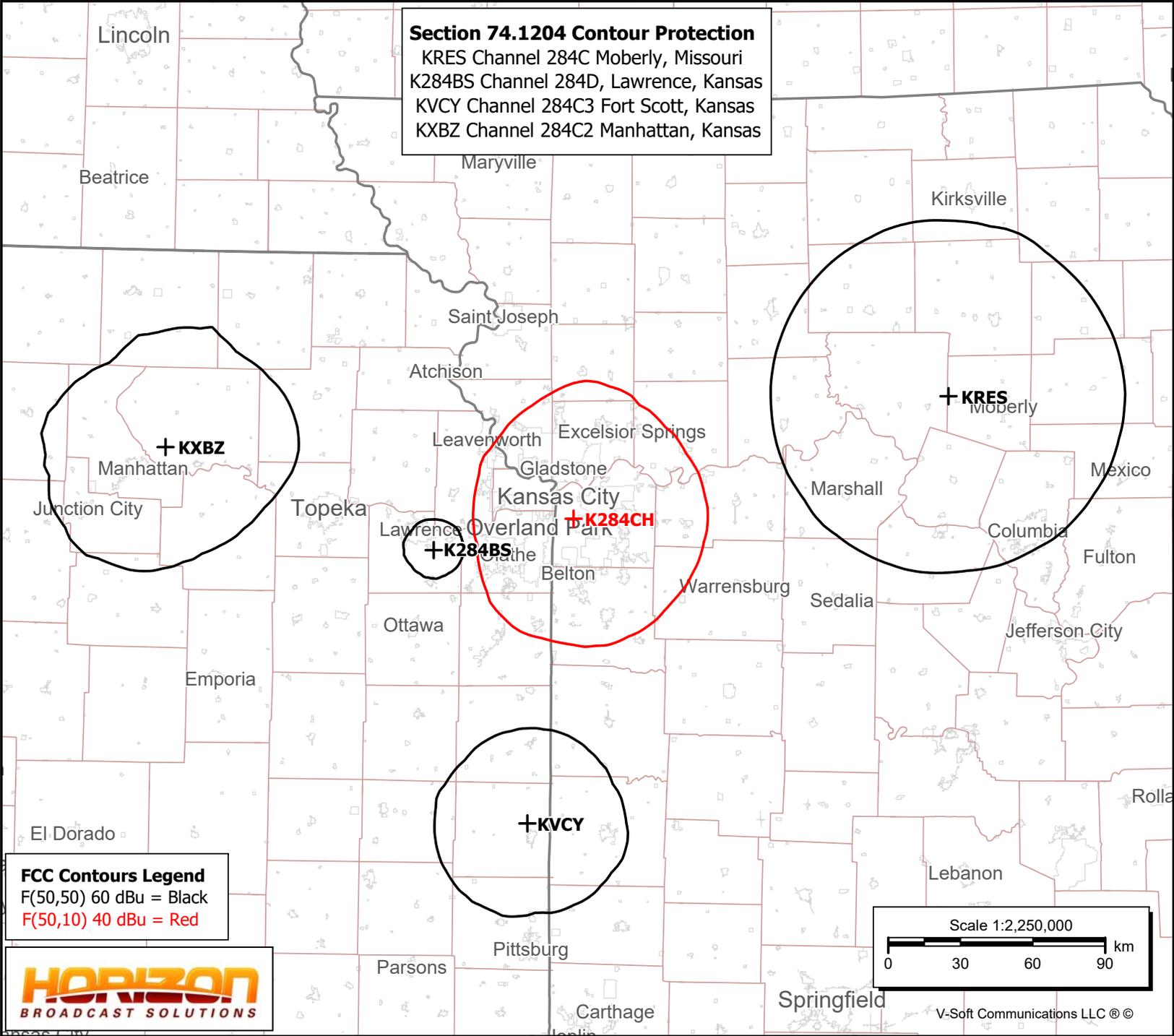
KRES
 Moberly, MO
 BLH19830124BA
 Latitude: 39-27-35.10 N
 Longitude: 092-42-07.60 W
 ERP: 100.00 kW
 HAAT: 311.0
 Channel: 284
 Frequency: 104.7 MHz

K284BS
 Lawrence, KS
 BLFT20190429AAZ
 Latitude: 38-53-46 N
 Longitude: 095-10-30 W
 ERP: 0.05 kW
 HAAT: 0.0
 Channel: 284
 Frequency: 104.7 MHz

KVCY
 Fort Scott, KS
 BLED19970929KE
 Latitude: 37-52-43.10 N
 Longitude: 094-43-24.90 W
 ERP: 16.00 kW
 HAAT: 125.0
 Channel: 284
 Frequency: 104.7 MHz

KXBS
 Manhattan, KS
 BMLH2011114BIR
 Latitude: 39-15-54.80 N
 Longitude: 096-27-58.50 W
 ERP: 50.00 kW
 HAAT: 148.8
 Channel: 284
 Frequency: 104.7 MHz

Section 74.1204 Contour Protection
 KRES Channel 284C Moberly, Missouri
 K284BS Channel 284D, Lawrence, Kansas
 KVCY Channel 284C3 Fort Scott, Kansas
 KXBS Channel 284C2 Manhattan, Kansas



**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. Alpine Broadcasting Corporation seeks to modify K284CH Channel 284D (104.7 MHz) Facility ID# 153375, Kansas City, MO by relocating to a different transmit antenna on the same tower as its licensed facility, changing the ERP to 99 watts directional. The tower is located at 39° 00 56.5" N ~ 94° 30' 25.0" W (NAD 83). The tower is 335.9 meters in overall height and is registered with Antenna Registration Structure (ASR) number 1003006. The antenna will be a Nicom BKG77 circularly polarized one bay directional antenna with a center of radiation of 279 meters AGL. This is also the transmit antenna of co-owned FM translator K295CH, Facility ID No. 36259, Kansas City, KS. Alpine will conduct a spurious harmonics study and submit the report as an accompanying exhibit with the K284CH license application. 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 K284CH proposes to operate from an existing tower and no modification of the tower is being made, 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 Nicom antenna is listed in the Commission's Revised FM Model for Windows Program under EPA Type 2, Opposed "V" dipole. Using the EPA Type 2 element the maximum calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $0.0254 \mu\text{W}/\text{cm}^2$ at 275 meters, which is 0.013 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

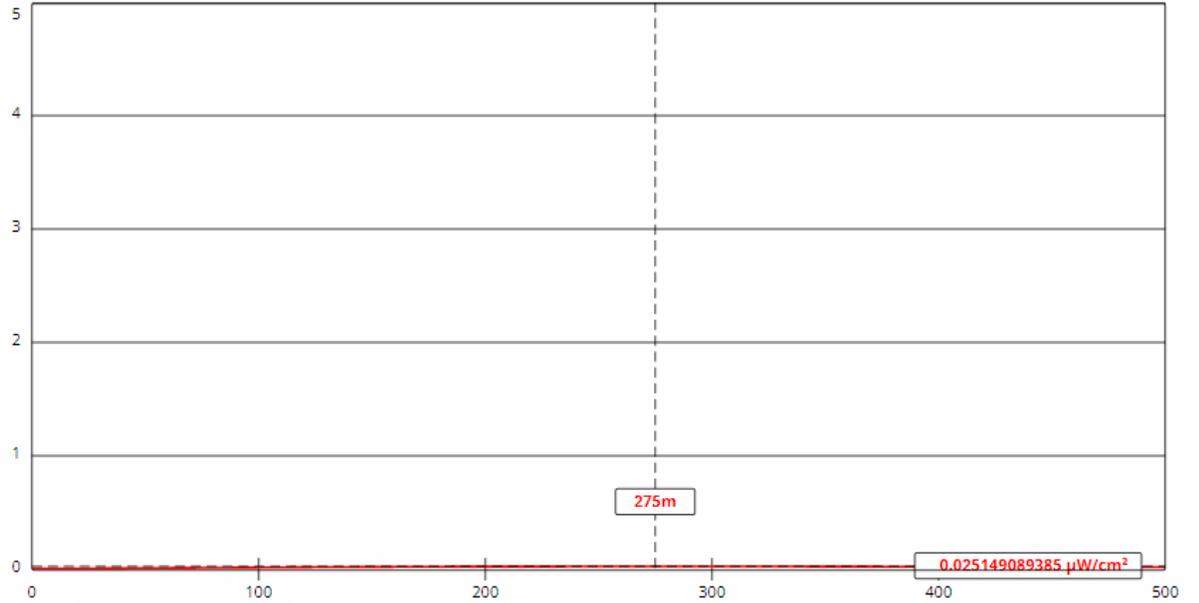
RF Safety FAQ

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 284 (104.7 MHz) ▼		
Antenna Type +	EPA Type 2: Opposed V Dipole ▼		
Height (m)	<input type="text" value="271"/>	Distance (m)	<input type="text" value="500"/>
ERP-H (W)	<input type="text" value="99"/>	ERP-V (W)	<input type="text" value="99"/>
Num of Elements	<input type="text" value="1"/>	Element Spacing (?)	<input type="text" value="1"/>
Num of Points	<input type="text" value="500"/>	<input type="button" value="Apply"/>	