

COMPREHENSIVE TECHNICAL EXHIBIT

K201HM, FID # 12349, Laramie, WY

DISCUSSION

Applicant seeks to modify FM Translator K201HM, Laramie, WY with a change in channel and ERP due to its “displacement” by the recent grant of a Construction Permit for a co-channel full service NCE FM (FCC FID # 768664, LMS File # 0000167334) at Laramie, WY.

LACK OF CONTOUR OVERLAP

The following study (**Figure 1**) reveals the lack of any contour overlap with 1st, 2nd, 3rd adjacent and I.F. related facilities, excepting Full Service KDTX, Facility ID # 93647, Laramie, WY, for which a 2nd adjacent waiver is being sought, and Full Service KUWY, Facility ID # 91583, Laramie, WY, for which a 2nd adjacent waiver is being sought. The close relationship with co-channel KAIW, Facility ID # 93001, Saratoga, WY is explored in **Figure 5** revealing the absence of any contour overlap.

REFERENCE		K201HM Displacement Western Inspirational Broadcasters, Inc. CH# 205D - 88.9 MHz, Pwr= 0.25 kW, HAAT= -47.5 M, COR= 2277 M Average Protected F(50-50)= 7.1 km Omni-directional										DISPLAY DATES	
41 18 27.8 N. 105 32 35.6 W.												DATA	01-10-22
												SEARCH	01-10-22
CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr(kw)	INT(km)	PRO(km)	*IN*	*OUT*		
CITY	STATE			←	FILE #	LNG.	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)			
205C2	KAIW	LIC	CN	293.8	90.00	41 37 48.90	0.580	119.5	48.8	-41.3*	0.3		
Saratoga	WY			113.2	BLED20170208AAL	106 32 02.90	996	3339	University of Wyoming				
207A	KTDK	LIC	CN	87.3	7.47	41 18 38.90	0.450	1.5	34.3	-1.1	-27.9*		
Laramie	WY			267.4	BLED20081010BIM	105 27 13.90	347	2751	Educational Communications				
203A	KUWY	LIC	CN	88.0	7.35	41 18 35.90	0.135	0.8	24.1	-0.6	-17.8*		
Laramie	WY			268.1	BLED20080303AJB	105 27 18.90	298	2703	University of Wyoming				
205C2	KRFC	CP	DCN	147.2	97.66	40 34 03.93	50.000	87.9	18.8	3.8	47.3		
Fort Collins	CO			327.6	0000131663	104 54 59.57	54	1581	Public Radio For The Front				
204A	KDNR	LIC	DCN	117.8	49.06	41 06 02.00	2.500	20.4	13.2	21.9	24.0		
South Greeley	WY			298.2	BLED20170926AFN	105 01 31.00	127	2153	Western Inspirational Broa				
204A	764211	CP	CN	189.8	49.65	40 52 03.00	0.005	11.7	8.2	28.0	29.2		
Red Feather Lakes	CO			9.7	0000166710	105 38 36.00	246	2928	Ridgeline Radio, Inc.				
206D	K206EO	LIC	CN	117.8	49.06	41 06 02.00	0.092	7.8	5.5	34.2	31.3		
Granite	WY			298.2	0000116077	105 01 31.00		2106	Educational Media Foundati				
205A	KRFC	LIC	EN	146.3	96.87	40 34 52.90	3.000	53.3	13.2	36.5	57.6		
Fort Collins	CO			326.7	BLED20030324ADY	104 54 21.90	66	1596	Public Radio For The Front				
206C3	769019	APP	DCN	84.1	60.04	41 21 40.00	10.000	14.0	10.0	39.0	39.8		
Cheyenne	WY			264.6	0000167770	104 49 39.00	81	1963	Radio 74 Internationale				
202A	KVXO	LIC	CN	166.6	78.94	40 36 59.90	0.140	0.8	23.7	69.9	53.4		
Fort Collins	CO			346.8	BLED20140731AQY	105 19 37.90	374	2545	Public Broadcasting Of Col				
259C3	DKHAN	VAC		328.3	71.21	41 51 05.88	25.000	18.5	5.6	11.5R	59.7M		
Medicine Bow	WY			148.0		105 59 44.03	100	2183	From CDBS				
206A	767299	APP	CN	99.3	92.93	41 10 01.00	3.300	20.0	13.5	65.8	69.3		
Hillsdale	WY			280.1	0000167431	104 26 51.00	32	1745	Cheyenne Broadcasting Foun				
206D	K206DB	LIC	DCN	161.3	95.50	40 29 35.90	0.012	1.6	0.8	86.2	84.4		
Cedar Cove	CO			341.6	BLFT20170620ABJ	105 10 54.90		2081	Cedar Cove Broadcasting, I				
204D	K204GT/K2	CP	CN	179.0	105.32	40 21 37.90	0.004	3.5	2.8	92.7	87.8		
Estes Park	CO			359.0	0000152850	105 31 13.90	20	2737	Educational Media Foundati				
204C1	KRKY-FM	APP	HN	8.3	174.23	42 51 28.90	60.000	67.9	42.5	95.6	118.0		

Douglas		WY	188.5	0000162803	105	14	04.90	101	1658	Cedar Cove Broadcasting, I
205C1 KCJX Carbondale	LIC	DEN CO	217.0 35.8	260.85 BLED20040907AAD	39	25	07.90	4.000	152.0	68.7 97.4 153.9 3227 Roaring Fork Public Radio,
206C1 KLWC Casper	CP	CN WY	338.6 158.1	171.27 0000120972	42	44	24.00	7.300	59.4	40.1 99.5 112.3 2519 Educational Media Foundati

Terrain database is NGDC 30 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference Zone= West Zone, Co to 3rd adjacent.
 All separation margins (if shown) include rounding. Call signs with exclamation marks need not be protected.
 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.
 « = Station meets FCC minimum distance spacing for its class.

2nd adjacent waiver sought

Figure 1

Waiver Request of Section 74.1204 and Showing of Compliance

With respect to KDTX(FM):

The proposed FM translator is located within the protected 60 dBu F(50,50) contour of 2nd adjacent channel KDTX, Laramie, WY (see **Figure 1**). The predicted F(50,50) field strength of KDTX at the proposed translator site is 83.59 dBu (free space equation).

Using the Undesired-to-Desired method for calculating proposed interference, the proposed interfering contour with respect to KDTX is 123.59 dBu (83.59 + 40) (free space method employed). This interfering signal would, in the worst case, extend 73.34 meters from the proposed antenna.

With respect to KUWY(FM):

The Proposed FM translator is located within the protected 60 dBu F(50,50) contour of 2nd adjacent channel KUWY, Laramie, WY (see **Figure 1**). The predicted F(50,50) field strength of KUWY at the proposed translator site is 78.21 dBu (free space equation).

Using the Undesired-to-Desired method for calculating proposed interference, the proposed interfering contour with respect to KUWY is 118.21 dBu (78.21 + 40) (free space method employed). This interfering signal would, in the worst case, extend 136.35 meters from the proposed antenna.

Since KUWY is the most restrictive related facility, the following discussion will focus on it:

An interference area represented by a circle having a radius of 137 meters from the proposed translator site has been plotted on a section of the 7.5 min USGS Laramie (USGS) Topographical Map (see **Figure 2**). In addition a circle with radius of 137 meters has been plotted on a recent aerial photo (see **Figure 3**)

The tallest building within the area of predicted interference (see **Figure 3**), a one-story warehouse structure, is 20 feet or less in height and is located at an elevation lower than the base of the tower such that there is more than 16.4 feet (5 meters) of ground clearance relative to the interference zone.

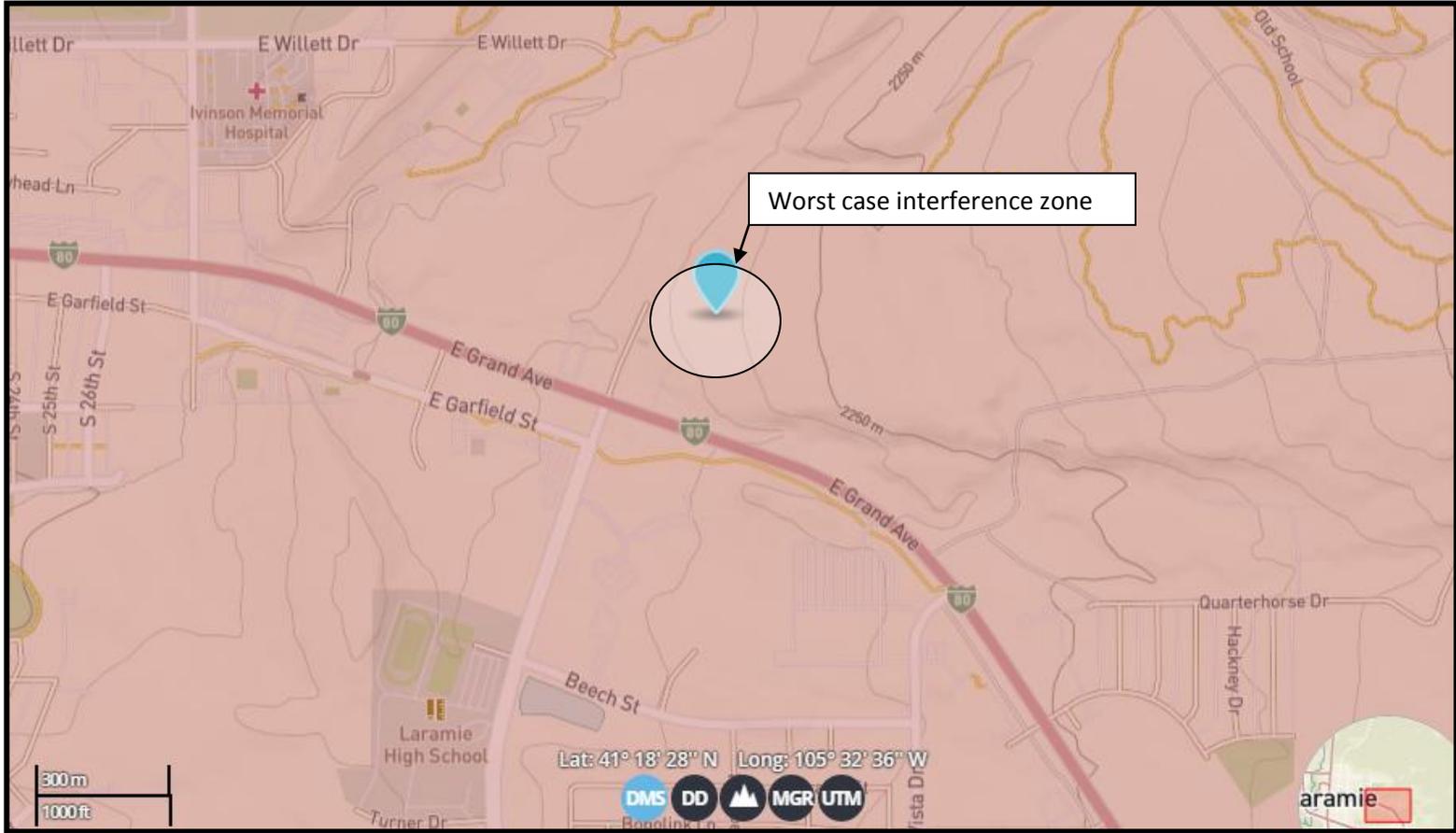


Figure 2

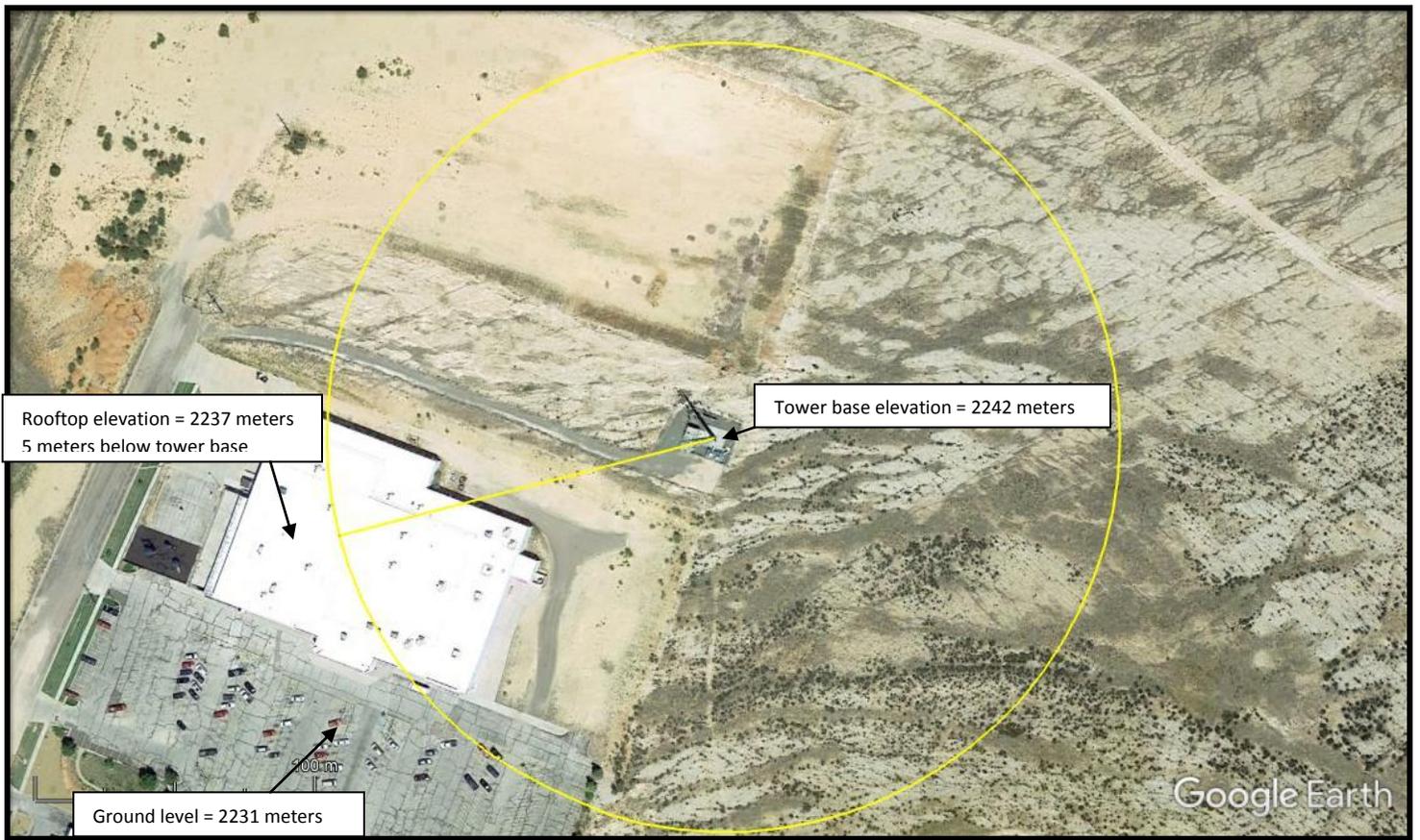


Figure 3

The field strength of the proposed translator's antenna varies with the angle of depression from horizontal. Relative fields of the proposed antenna are tabulated below in 5 degree increments, beginning at 5 degrees below horizontal. (Antenna relative field strength data was provided by the manufacturer of the proposed antenna).

Employing free- space calculations that neglect any loss due to reflection, the vertical ground clearance of the proposed translator's interference contour was tabulated relative to the roof elevation of the nearby warehouse and is shown below.

The NICOM Antenna, Model: BKG77/2 2 bay (1/2 wave spacing), is mounted with a CORAGL of 39 meters. However, since the roof of the building of interest is 5 meters below the base elevation of the tower (see **Figure 3**), the effective CORAGL of concern is 44 meters.

With an ERP of 250 watts, the area of interference clears the roof level at the warehouse by 4.7 meters at a distance of 84.3 meters from the tower base, at its lowest point (see **Figure 4**).

Freespace Interference Study based on Vertical Radiation Pattern

Nicom BKG77 2 2 bay
 half wave
 CORAGL = 44 meters
 ERP = 250 watts
 InterferingContour:
 F(50,10) = 118.21dBu

Depression Angle (from COR)	Antenna Relative Field	ERP (watts)	Horiz Dist of Interfering Contour from Tower (m)	Vertical Clearance of Interfering Contour above ground (m)
5	0.988	244	134.1	32.0
10	0.947	224.2	127.1	21.6
15	0.871	189.7	114.7	13.3
20	0.792	156.8	101.4	7.1
25	0.682	116.3	84.3	4.7
30	0.565	79.8	66.5	5.6
35	0.496	61.5	55.4	5.2
40	0.376	35.3	39.2	11.1
45	0.273	18.6	26.3	17.7
50	0.188	8.8	16.5	24.4
55	0.131	4.3	10.2	29.4
60	0.079	1.6	5.4	34.6
65	0.047	0.6	2.7	38.2
70	0.022	0.1	1.0	41.2
75	0.01	0	0.4	42.6
80	0.003	0	0.1	43.6
85	0.001	0	0.0	43.9
90	0.001	0	0.0	43.9
Rooftop Clearance (meters) =				4.7
Rooftop Clearance (feet) =				15.4

Figure 4

Since no population inhabits the interference area, the Applicant respectfully requests waiver of the FM translator contour overlap requirements with respect to 2nd adjacent station KTDX, and 2nd adjacent station KUWY as permitted in CFR Section 74.1204.

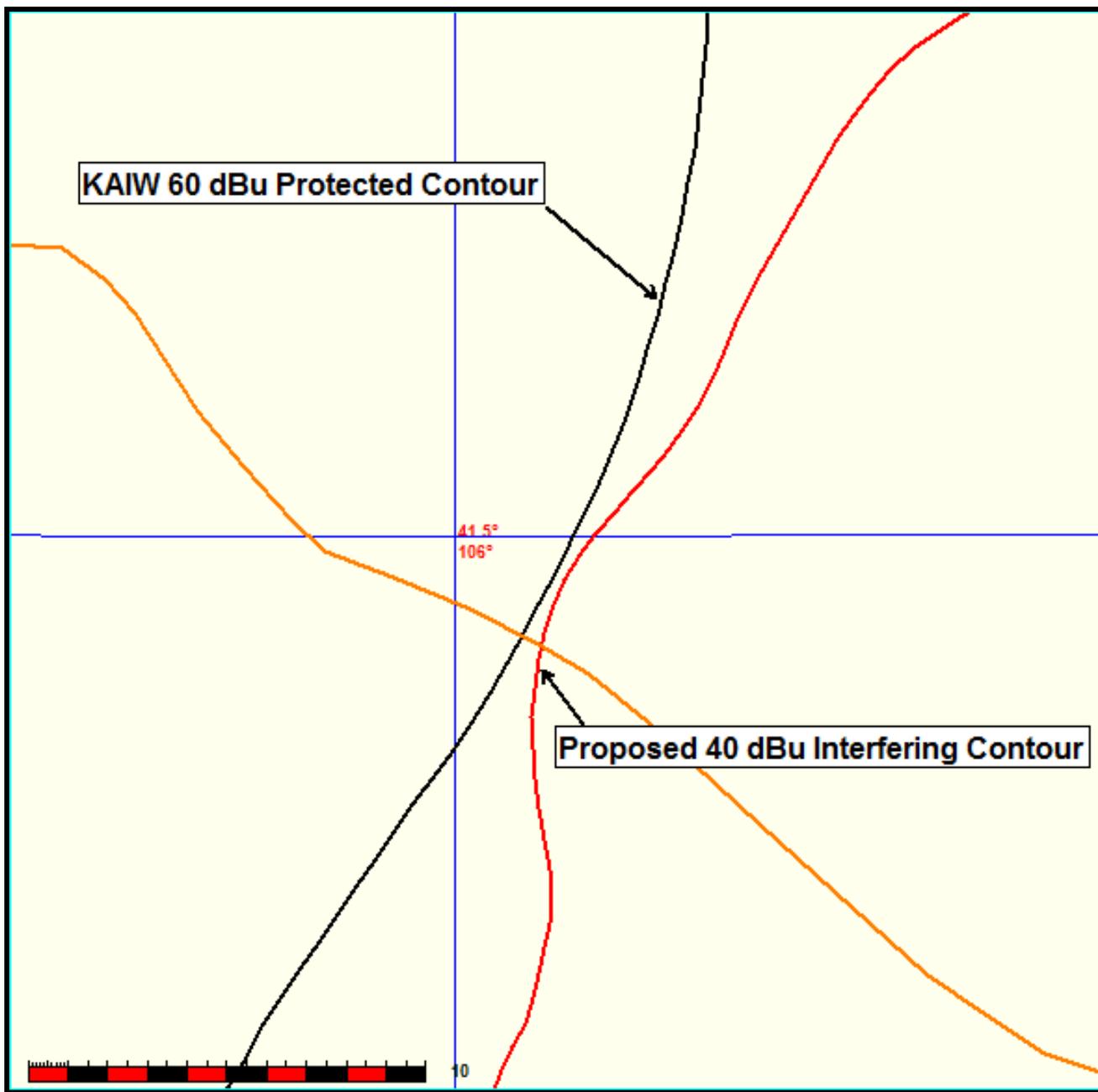


Figure 5

OVERLAPPING 60 dBu CONTOUR MODIFICATION QUALIFICATION

Figure 6 below demonstrates the overlapping 60 dBu contours of the licensed and proposed facilities.

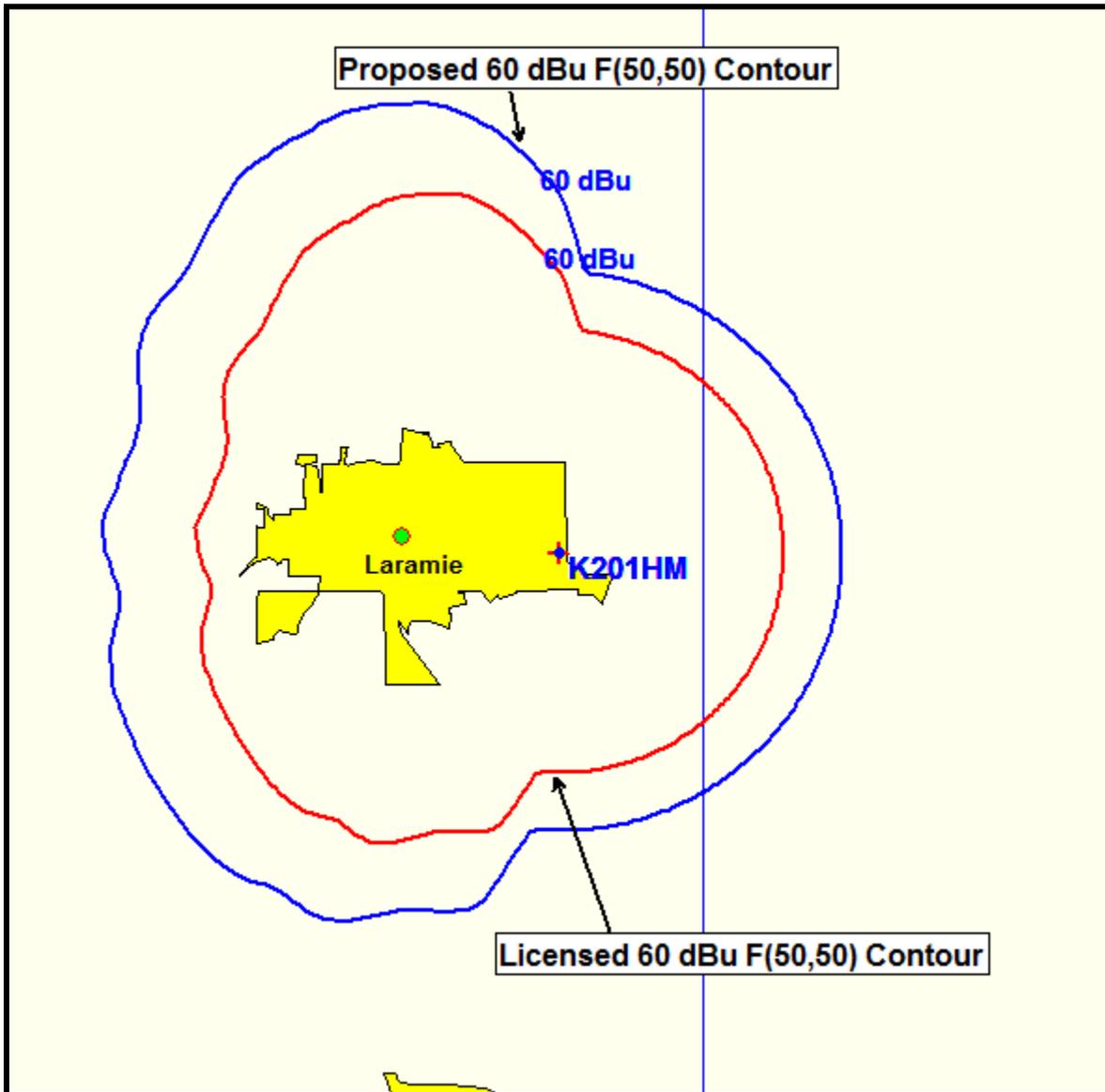


Figure 6

ENVIRONMENTAL COMPLIANCE

There will be no new construction. There will be no change in the current configuration except for an increase in ERP and change of frequency.

The FCC FMModel software predicts RFR of 0.74 uW/cm^2 at a distance of 39 meters from the base of the tower. This is well below the limitation for both controlled and uncontrolled access.

Even though the site will fully comply with the Uncontrolled Site Standards, access to the transmitting site will be restricted by a locked 8 ft. hurricane style fence and appropriately marked with warning signs. When it becomes necessary for workers to ascend the tower, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency radiation will not exceed the FCC guidelines.