

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.

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

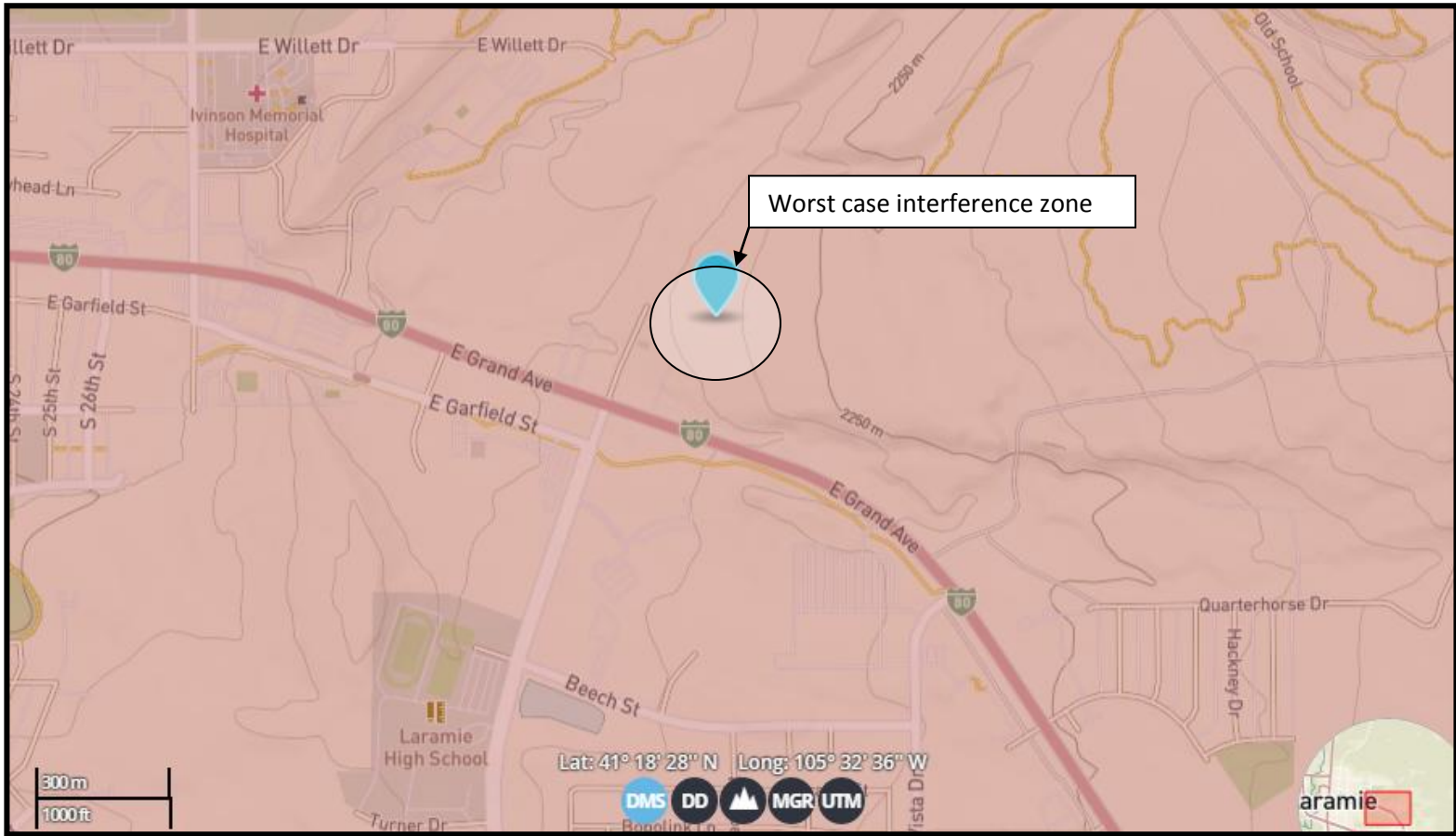


Figure 2

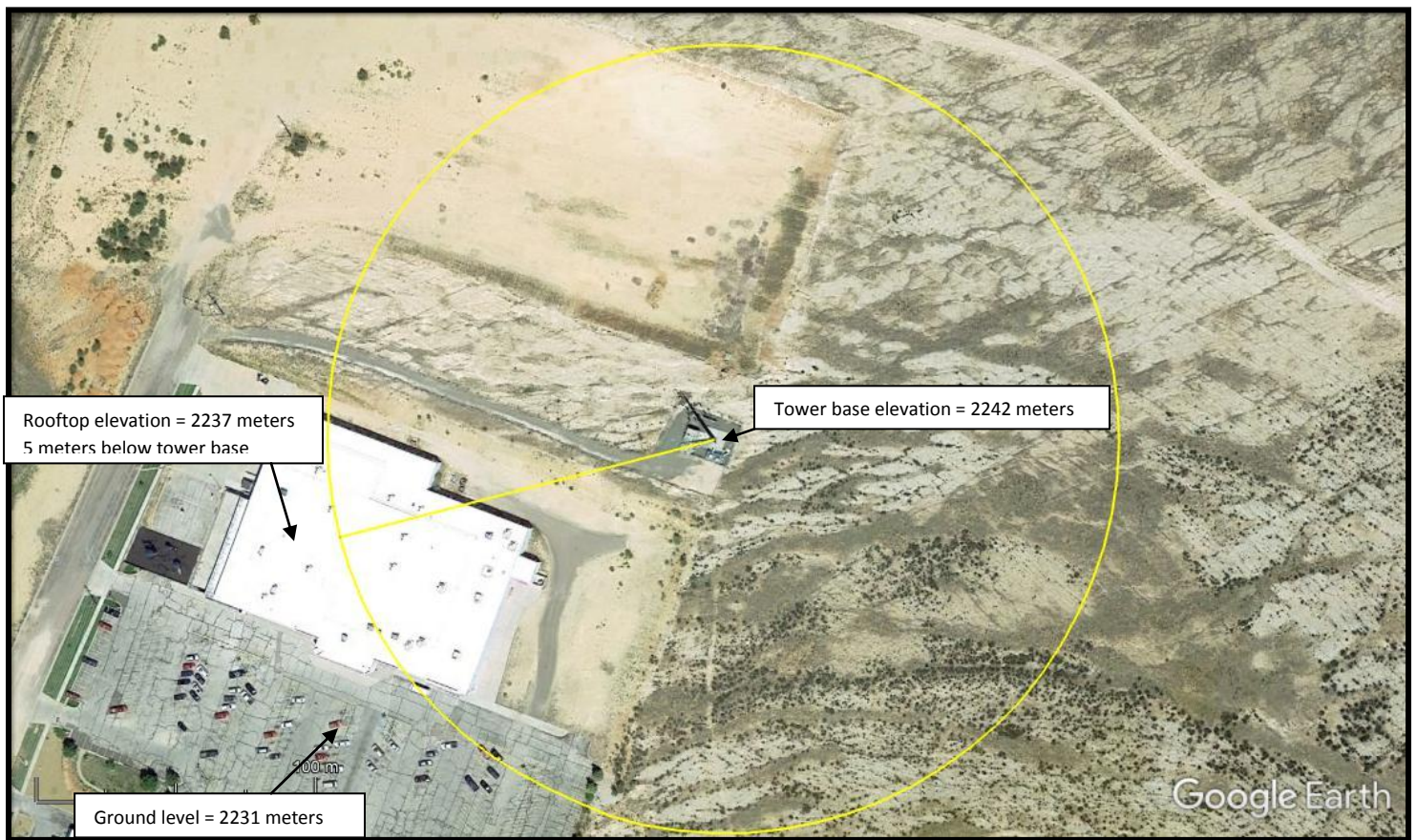


Figure 3

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.

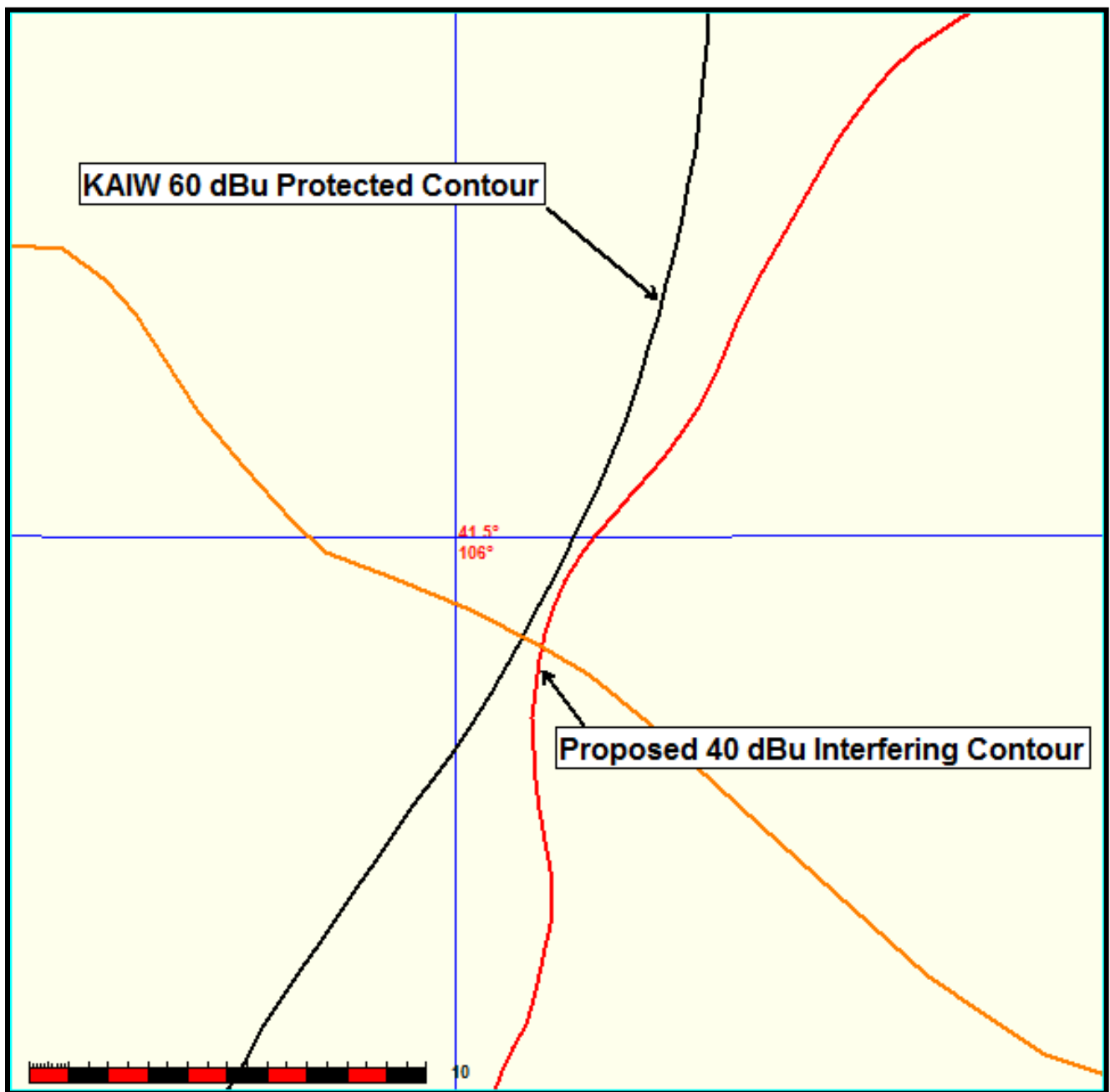


Figure 5

OVERLAPPING 60 dBu CONTOUR MODIFICATION QUALIFICATION

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

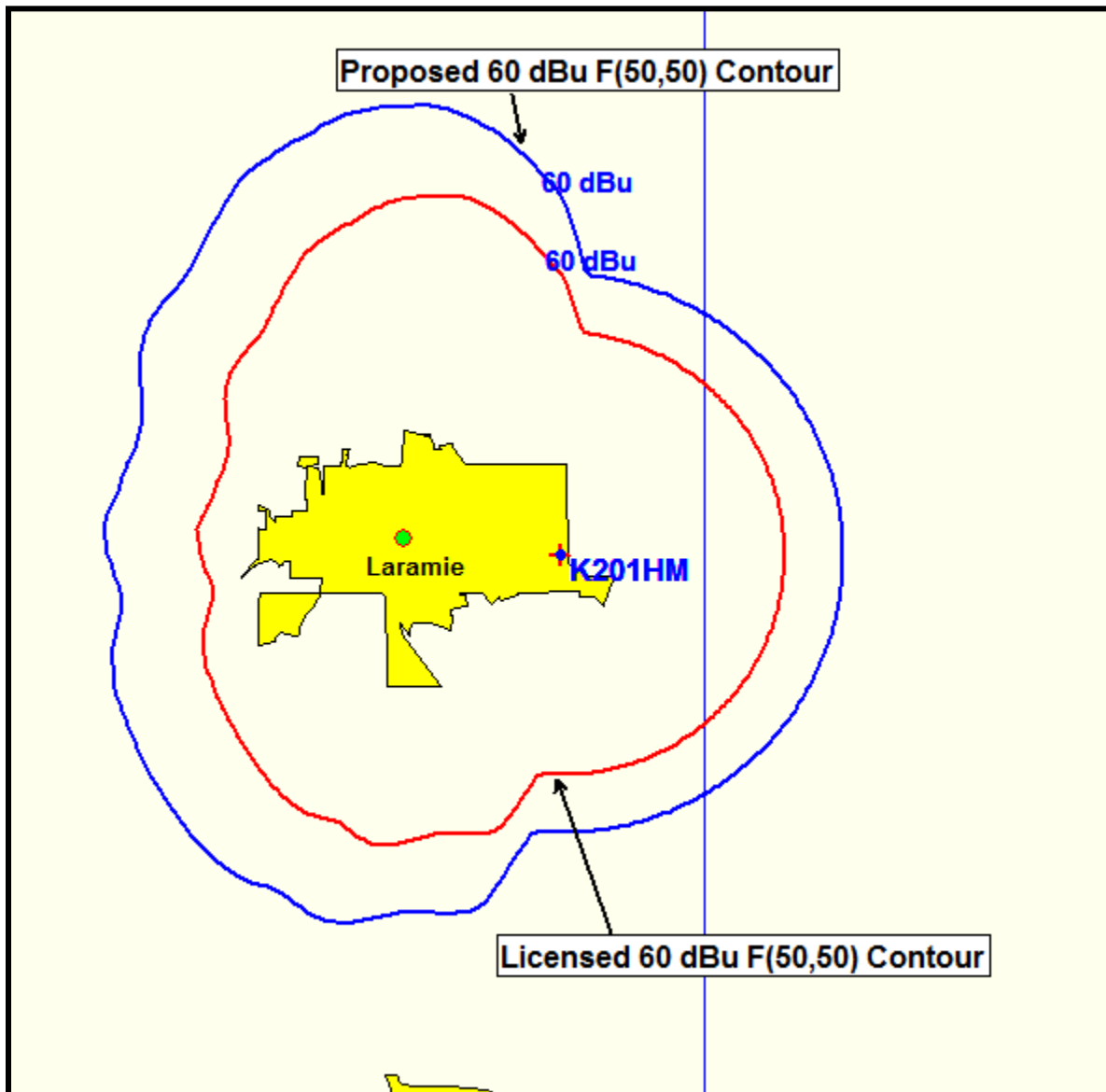


Figure 6

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.