

**September 2022
KRMK(FM) Channel 229C1
Las Vegas, NM
Allocation Study**

The attached spacing study shows that the proposed Channel 229C1 transmitter site meets the co-channel and adjacent channel spacing requirements for Class C1 stations as prescribed in §73.207 of the Commission's Rules, with the exception of short-spacings to:

- a) the licensed operation of KRTN-FM on Channel 230C1 at Raton;
- b) the licensed operation of KNCE on Channel 228A at Taos;
- c) the licensed operation of KOBQ on Channel 227C at Albuquerque, and;
- d) the licensed operation of KZRR on Channel 231C at Albuquerque.

Processing pursuant to §73.215 of the Commission's Rules is requested with respect to these facilities, and the attached allocation study maps are included to demonstrate the lack of prohibited contour overlap with those facilities.

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SEARCH PARAMETERS

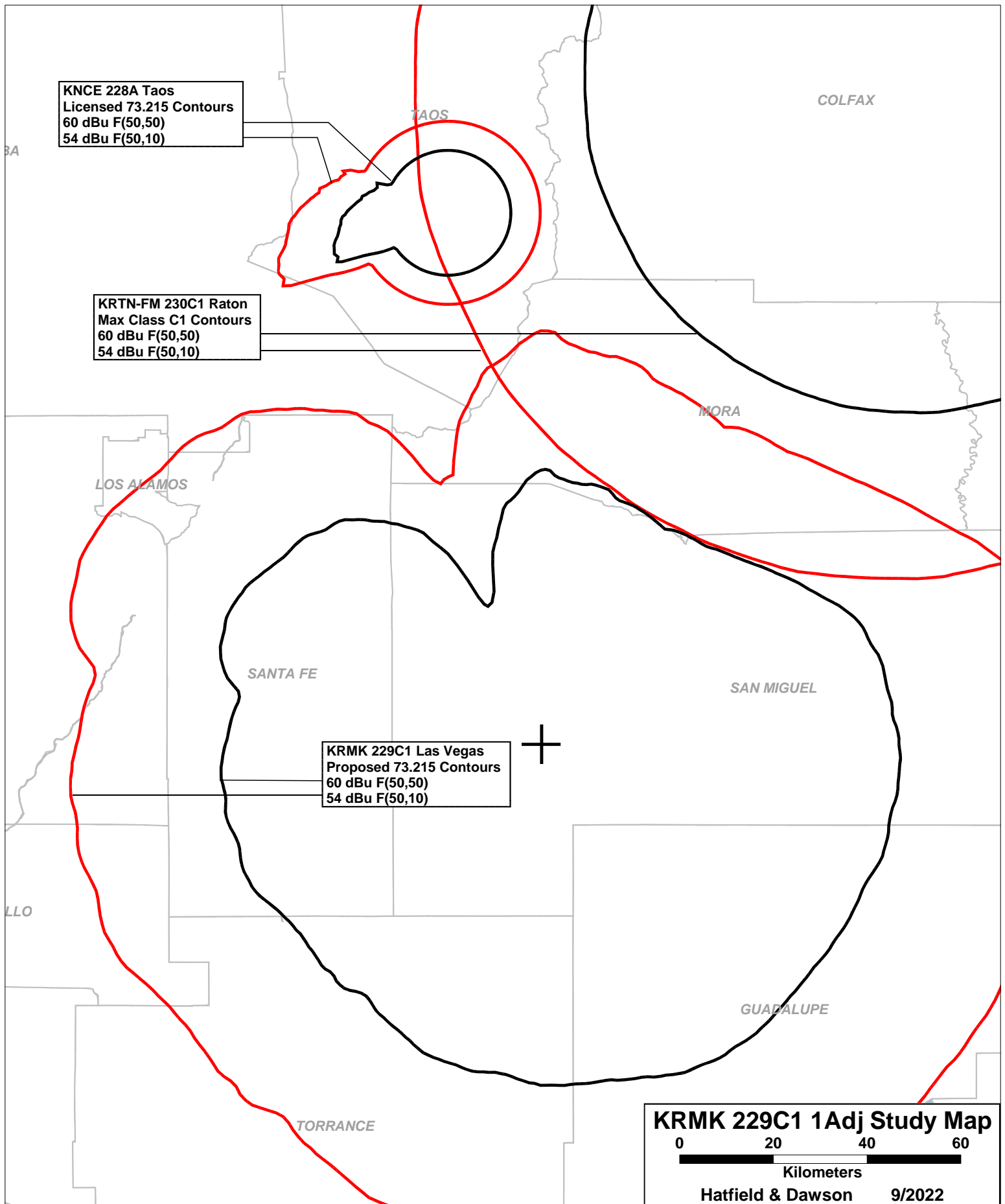
FM Database Date: 20220829

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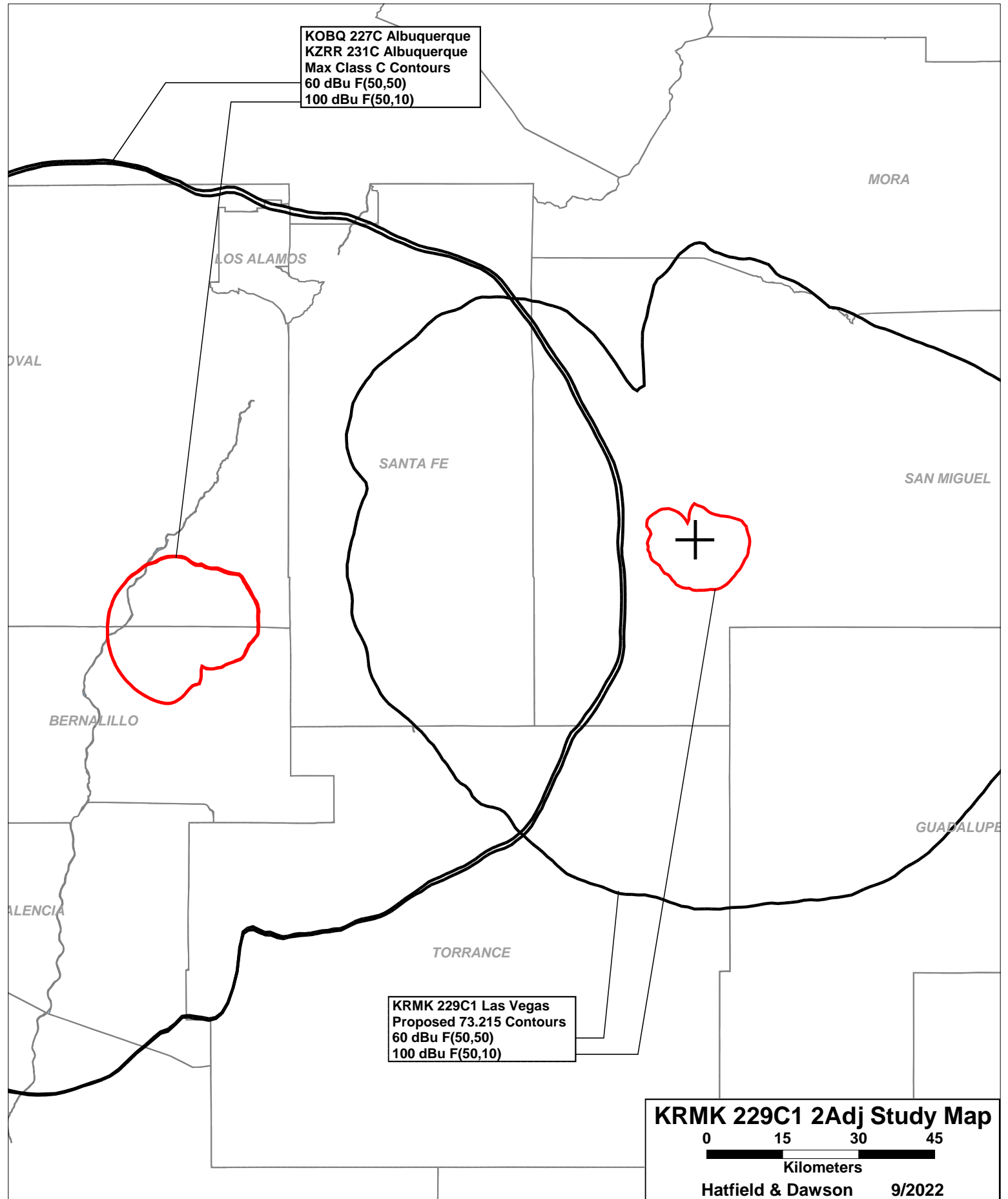
Channel: 229C1 93.7 MHz
 Latitude: 35 22 20.4 (NAD83)
 Longitude: 105 22 1.2
 Safety Zone: 32 km
 Job Title: KRMK 229C1 LAS VEGAS

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KOBQ	ALBUQUERQUE		227C	21.500	35 12 42.1	260.0	100.14	105
LIC	NM	BLH-19841011BY	93.3	1265.0	106 27 1.0		-4.86	SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 99 KM								
KNCE	TAOS		228A	3.000	36 23 22.1	350.2	114.58	133
LIC	NM	BLH-20150515AAD	93.5	-192.0	105 35 11.0	SS	-18.42	SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 111 KM								
K229BV	ROSWELL		229D	0.250	33 26 22.0	160.1	227.87	0
CP	NM	0000153667	93.7	0.0	104 31 40.0		0.00	TRANS
K229BV	ROSWELL		229D	0.250	33 23 55.3	160.3	232.31	0
LIC	NM	BMLFT-20180502AA	93.7	0.0	104 31 19.8		0.00	TRANS
K229CL	ALBUQUERQUE		229D	0.250	DA 35 13 0.1	260.4	100.24	0
LIC	NM	BLFT-20150317AAN	93.7	0.0	106 27 9.0		0.00	TRANS
KRMK	LAS VEGAS		229C1	0.000	35 13 11.2	142.7	21.29	245
ALC	NM		93.7	0.0	105 13 30.0		-223.71	SHORT
KRMK	LAS VEGAS		229A	0.120	35 35 57.2	30.3	29.20	200
LIC	NM	0000180856	93.7	-73.0	105 12 14.0		-170.80	SHORT
K229CL	ALBUQUERQUE		229D	0.250	DA 35 13 0.1	260.4	100.24	0
APP	NM	0000197955	93.7	0.0	106 27 9.0		0.00	TRANS
K229DU	SANTA FE		229D	0.250	DA 35 40 43.1	301.2	66.07	0
LIC	NM	0000153650	93.7	0.0	105 59 30.1		0.00	TRANS
KRTN-FM	RATON		230C1	26.000	36 40 59.1	30.2	168.89	177
LIC	NM	BLH-20010418AAG	93.9	441.0	104 24 51.9		-8.11	SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 158 KM								
KZRR	ALBUQUERQUE		231C	22.500	35 12 44.1	260.0	100.10	105
LIC	NM	BLH-7522	94.1	1259.0	106 27 0.0		-4.90	SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 99 KM								

===== END OF FM SPACING STUDY FOR CHANNEL 229 =====



KOBQ 227C Albuquerque
KZRR 231C Albuquerque
Max Class C Contours
60 dBu F(50,50)
100 dBu F(50,10)



KRMK 229C1 Las Vegas
Proposed 73.215 Contours
60 dBu F(50,50)
100 dBu F(50,10)

KRMK 229C1 2Adj Study Map

0 15 30 45

Kilometers

Hatfield & Dawson

9/2022

September 2022
KRMK(FM) Channel 229C1
Las Vegas, NM
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 229C1 (93.7 MHz) with a maximum lobe effective radiated power of 100 kilowatts. Operation is proposed with a 5-element horizontally-polarized directional antenna. The antenna will be side-mounted on tower on a ridge overlooking Blanchard, New Mexico. The FCC Antenna Structure Registration Number for this tower is #1005338.

RF Exposure Calculations

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

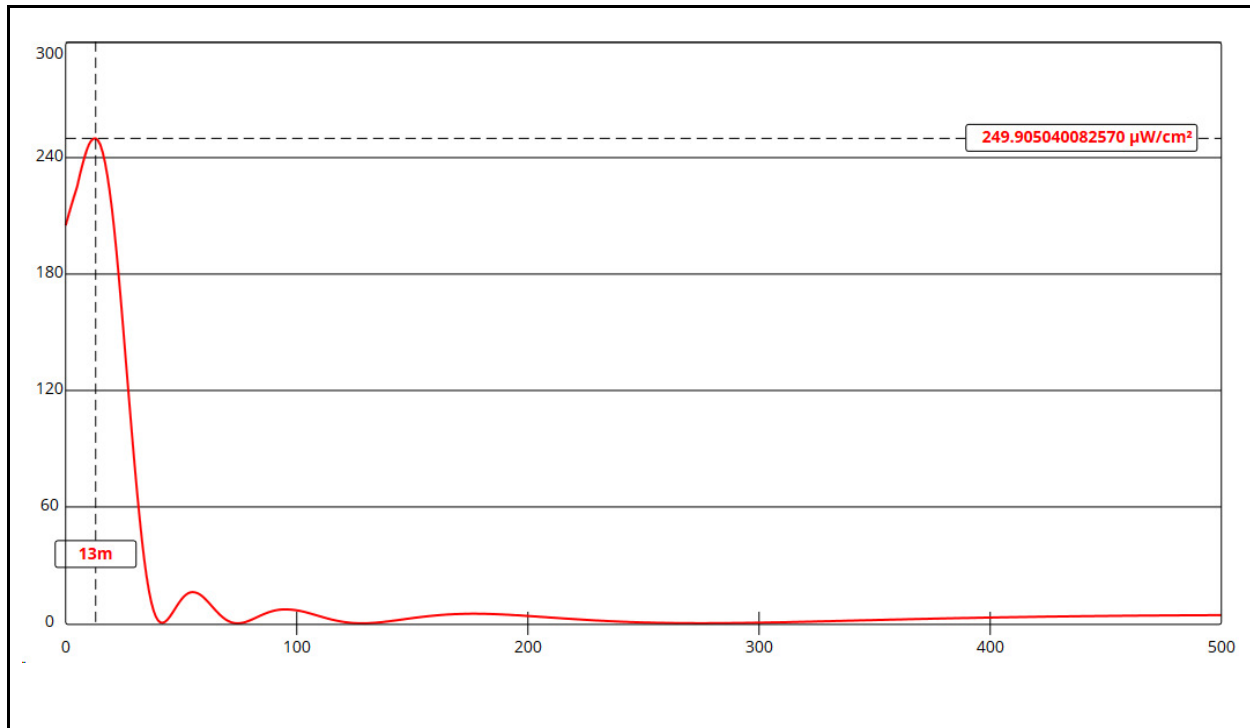
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 1 element pattern, which is the "worst case" element pattern. The highest calculated ground level power density occurs at a distance of 13 meters from the base of the antenna support structure. At this point the power density is calculated to be 249.9 $\mu W/cm^2$, which is 25% of 1000 $\mu W/cm^2$ (the FCC standard for controlled environments) and 125% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

FM station KBAC is located on a nearby tower. Calculations of the power density produced by the KBAC antenna system assume a Type 3 element pattern, which is the appropriate element pattern for the ERI FMH-8AC antenna used by that station. The highest calculated ground level power density occurs at a distance of 28 meters from the base of the antenna support structure. At this point the power density is calculated to be $36.8 \mu\text{W}/\text{cm}^2$, which is 3.7% of $1000 \mu\text{W}/\text{cm}^2$ (the FCC standard for controlled environments) and 18.4% of $200 \mu\text{W}/\text{cm}^2$ (the FCC standard for uncontrolled environments).

If required by the Commission, post-construction RFR measurements will be performed for KRMK as a condition for licensing.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.



Ground-Level RF Exposure

OET FMModel

KRMK 229C1 Las Vegas

Antenna Type: ring-stub assumed (Type 1)

No. of Elements: 5

Element Spacing: 1.0 wavelength

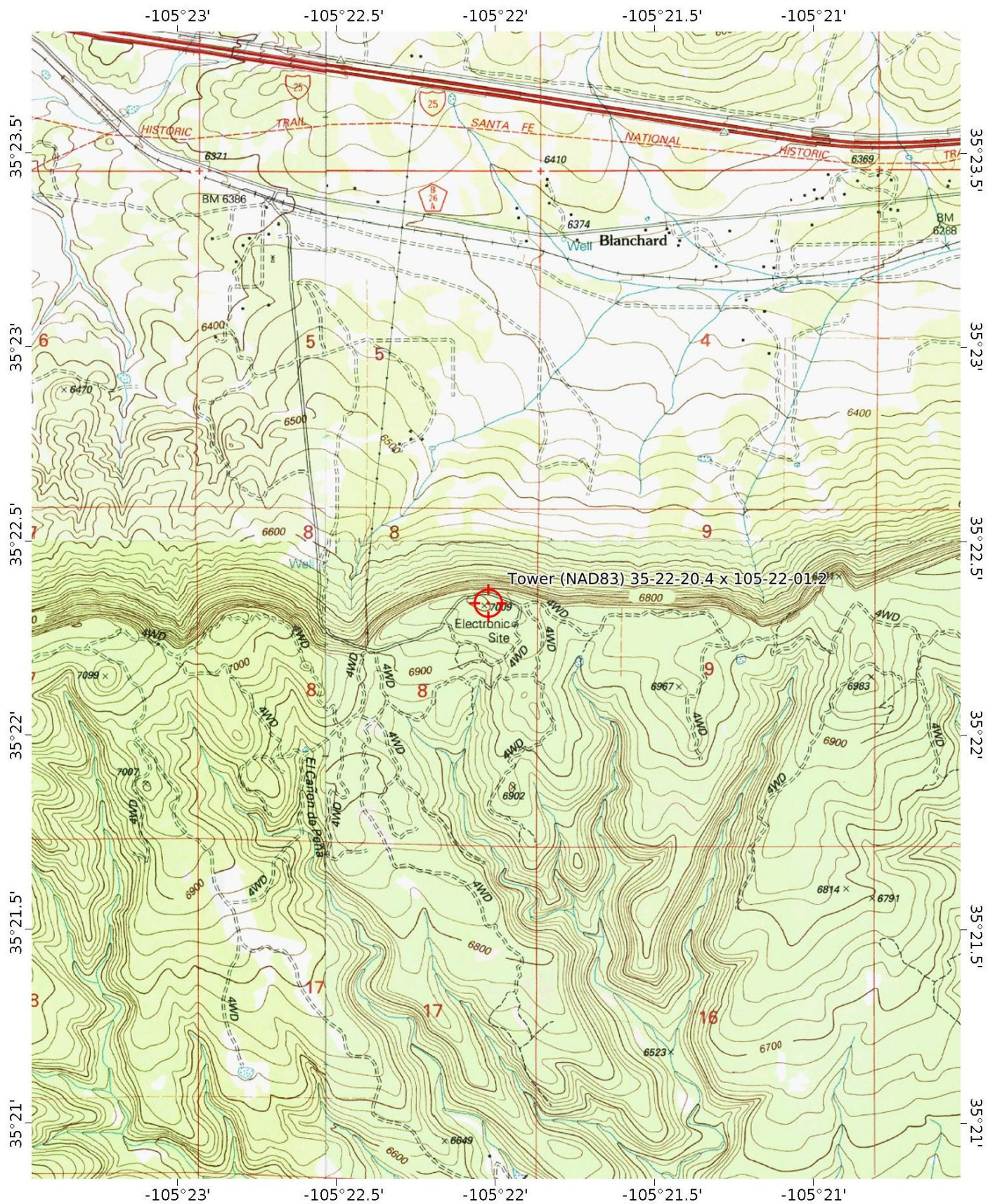
Distance: 500 meters

Horizontal ERP: 100 kW

Vertical ERP: zero kW

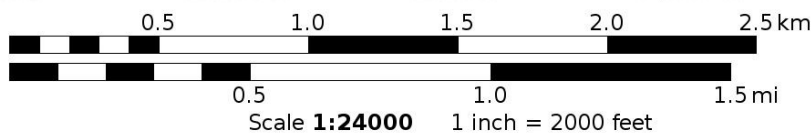
Antenna Height: 58 meters AGL

Maximum Calculated Power Density is 249.9 $\mu\text{W}/\text{cm}^2$ at 13 meters from the antenna structure.



Mercator Projection

WGS84
UTM Zone 13S



Hatfield & Dawson Consulting Engineers

