

January 2016
FM Translator K241AK
Reno, Nevada Channel 241D
Allocation Study

Purpose of Application

The instant application proposes to modify the licensed FM translator facility, to operate with a circularly polarized antenna rather than a vertically-polarized antenna. There is no change in the translator's protected or interfering contours as a result of this modification.

Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The proposed translator transmitter site is located within the 60 dBu protected contour of third-adjacent channel station KNEV 238C Reno. The proposed site is 36.92 km from the KNEV transmitter site at a bearing of 347 degrees True. Given the KNEV antenna's 661 meter HAAT and 60 kW ERP along this radial, KNEV places an 82.4 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $82.4 + 40 = 122.4$ dBu. The attached map of the proposed transmitter site depicts the 122.4 dBu contour from the proposed facility, extending 84 meters from the antenna per a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KNEV.

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KLCA 243C1 Tahoe City. The proposed site is 31.22 km from the KLCA transmitter site at a bearing of 14 degrees True. Given the KLCA antenna's 951 meter HAAT and 6.1 kW ERP along this radial, KLCA places a 78.6 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $78.6 + 40 = 118.6$ dBu. The attached map of the proposed transmitter site depicts the 118.6 dBu contour from the proposed facility, extending 130 meters from the antenna per a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KLCA.

The attached spacing study demonstrates compliance with §73.207 of the Commission's Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

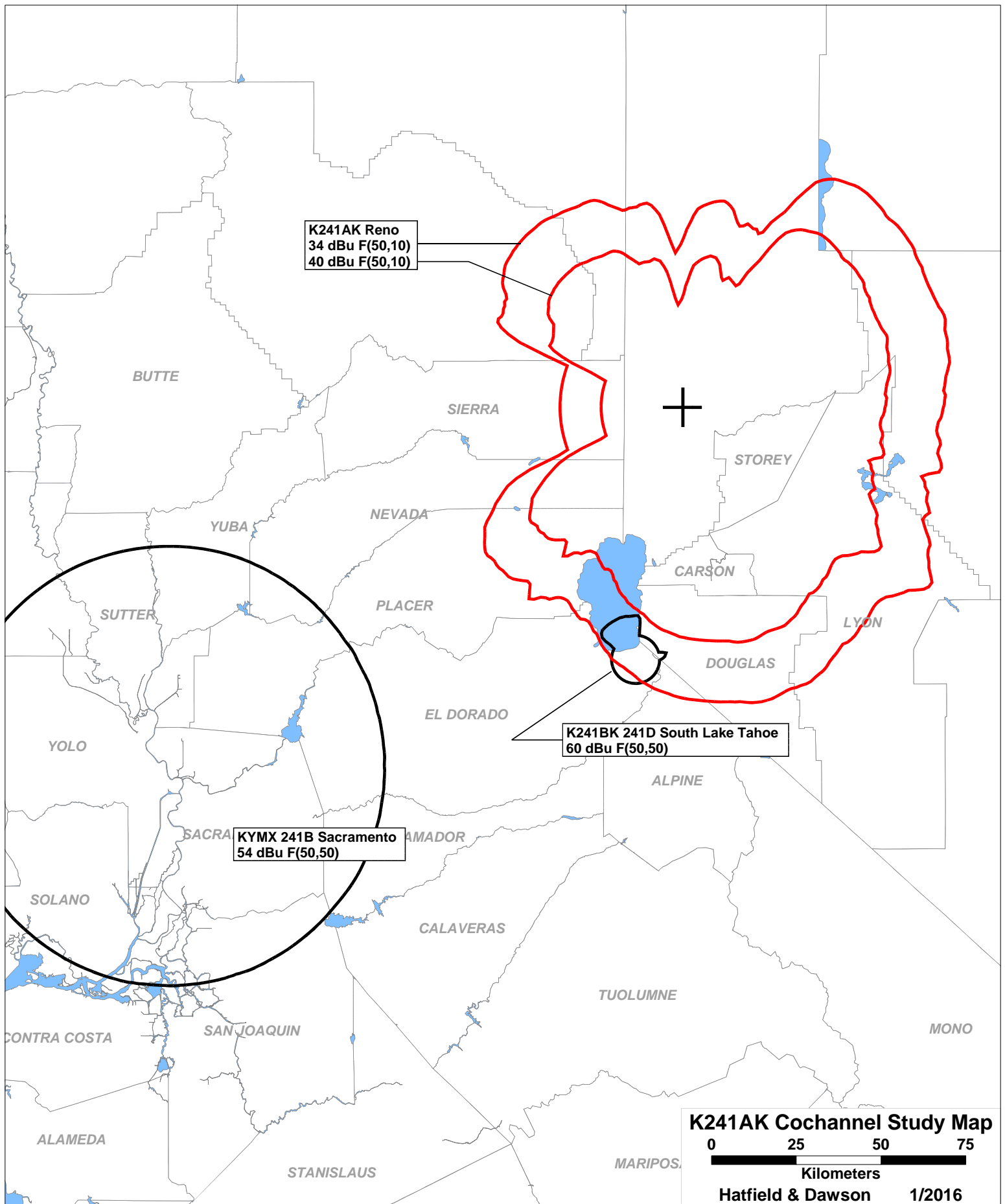
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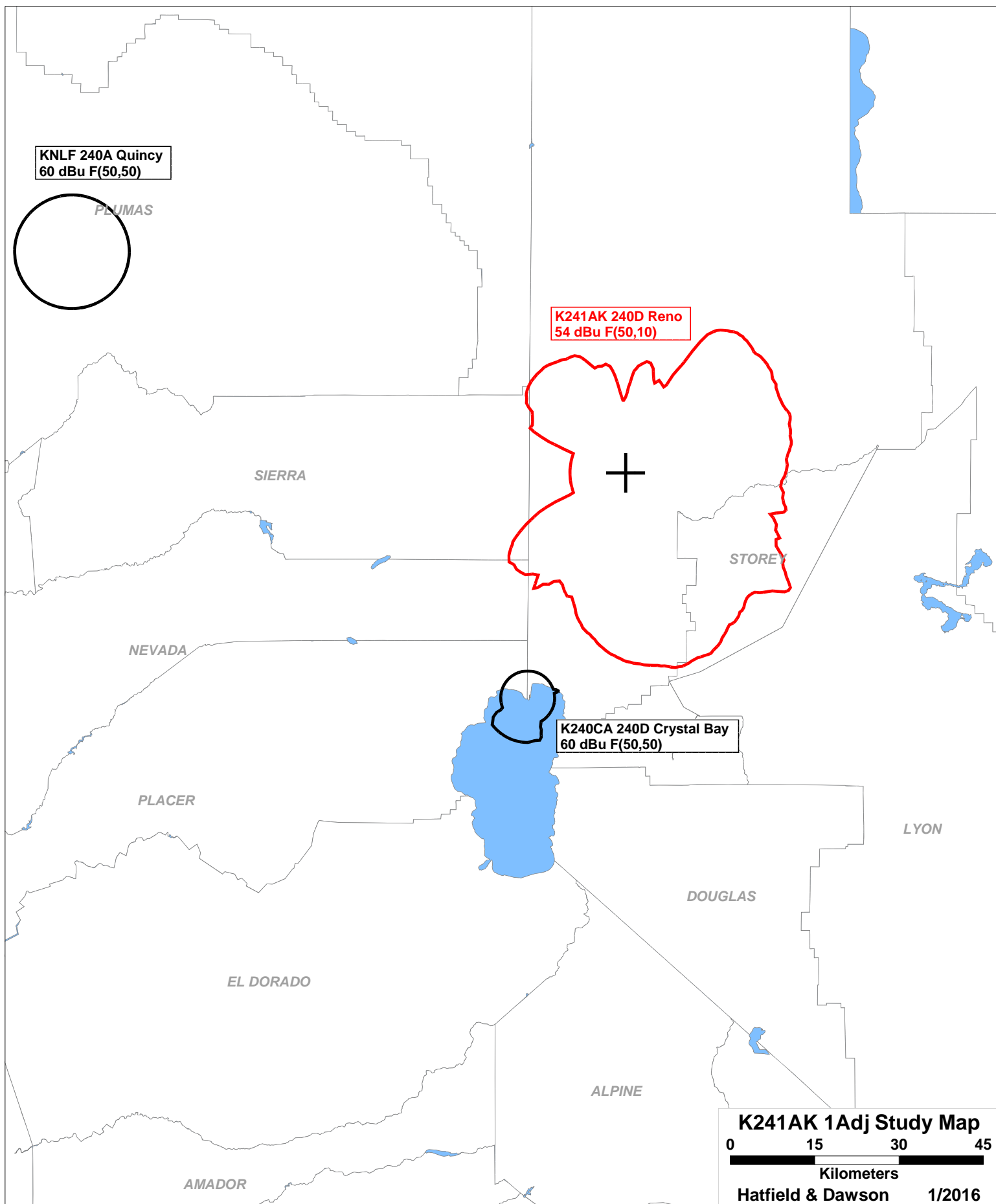
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SEARCH PARAMETERS                               FM Database Date: 160115
Channel: 241A      96.1 MHz                      Page 1
Latitude: 39 35 2
Longitude: 119 47 55
Safety Zone: 50 km
Job Title: K241AK RENO

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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KNEV LIC	RENO NV	BLH-921029KA	238C 95.5	60.000 695.0	39-15-34 119-42-16	167.3	36.92 -58.08	95 SHORT
KNLF LIC	QUINCY CA	BLH-960612KG	240A 95.9	1.000 -339.0	39-56-15 120-56-44	292.2	105.84 33.84	72 CLEAR
K240CA LIC	CRYSTAL BAY(BROCKWAY NV	BLFT-900326TL	240D 95.9	0.053 DA 78.0	39-13-28 120-00-14	203.9	43.65 0.00	0 TRANS
KYMX LIC	SACRAMENTO CA	BLH-850313KK	241B 96.1	50.000 145.0	38-38-09 121-33-11	235.7	184.68 6.68	178 CLOSE
K241BK LIC	SOUTH LAKE TAHOE CA	BLFT-00810ABW	241D 96.1	0.250 99.0	38-55-00 119-57-44	190.8	75.41 0.00	0 TRANS
K241AK LIC	RENO NV	BLFT-20305ACD	241D 96.1	0.250 337.0	39-35-02 119-47-55	0.0	0.00 0.00	0 TRANS
KAJK LIC	SUSANVILLE CA	BMLH-01223AAS	242A 96.3	1.500 -161.0	40-26-36 120-38-35	323.3	119.60 47.60	72 CLEAR
KLCA LIC	TAHOE CITY CA	BLH-980116KC	243C1 96.5	6.100 903.0	39-18-38 119-53-01	193.5 SS	31.22 -43.78	75 SHORT
KRNO LIC	INCLINE VILLAGE NV	BMLH-10806AAN	295C 106.9	37.000 911.0	39-18-38 119-53-01	193.5	31.22 2.22	29 CLOSE

===== END OF FM SPACING STUDY FOR CHANNEL 241 =====







January 2016
FM Translator K241AK
Reno, Nevada Channel 241D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 241D (96.1 MHz) with an effective radiated power of 250 watts. Operation is proposed with a two-element antenna (98 inch interbay spacing) to be mounted on an existing tower on Red Peak. The antenna system will be shared by FM translators K223AL, K241AK, K245BV, and K285EQ.

The antenna support structure does not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

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.

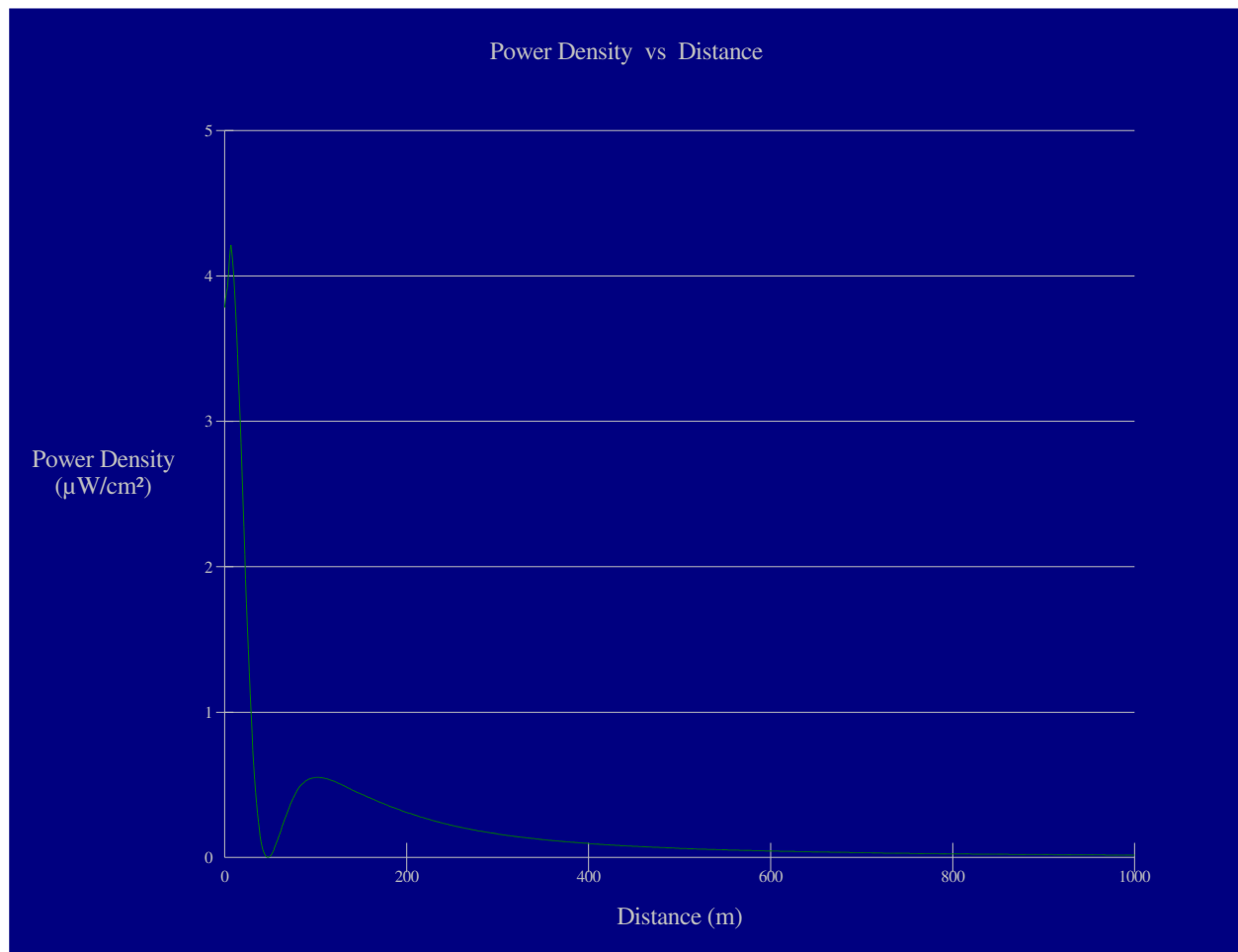
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed K241AK 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 7 meters from the base of the antenna support structure. At this point the power density is calculated to be 4.2 $\mu W/cm^2$, which is 2.1% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K241AK alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to

be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

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 radiation in excess of FCC guidelines.



Ground-Level RF Exposure

OET FMModel

K241AK Reno

Antenna Type: Shively 6832-2

No. of Elements: 2

Element Spacing: 0.80 wavelength (2.49 meter spacing between bays)

Distance: 1000 meters

Horizontal ERP: 0.250 kW

Vertical ERP: 0.250 kW

Antenna Height: 40 meters AGL

Maximum Calculated Power Density is $4.2 \mu\text{W}/\text{cm}^2$ at 7 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers