

May 2012
FM Translator K295BP
Kennewick, WA Channel 297D
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. Certain second-adjacent channel considerations are discussed in more detail, below.

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.

KWVN-FM 299C1 Pendleton

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KWVN-FM on Channel 299C1 at Pendleton. The proposed site is 77.58 km from the KWVN-FM transmitter site at a bearing of 325 degrees True. Given the KWVN-FM antenna's 622 meter HAAT and 75 kW ERP along this radial, KWVN-FM places a 65.1 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $65.1 + 40 = 105.1$ dBu.

The maximum distance to the 105.1 dBu contour, as calculated using Free Space methodology, is 276 meters. The maximum extent of this area is depicted on the attached transmitter site map exhibit as a red circle with a radius of 276 meters. (While a directional antenna will be used for this facility, omnidirectional operation has been depicted on the map exhibit for the sake of simplicity and a "worst case" analysis.) This area is unpopulated.

Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KWVN-FM.

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SEARCH PARAMETERS FM Database Date: 120521

Channel: 297A 107.3 MHz Page 1

Latitude: 46 9 44

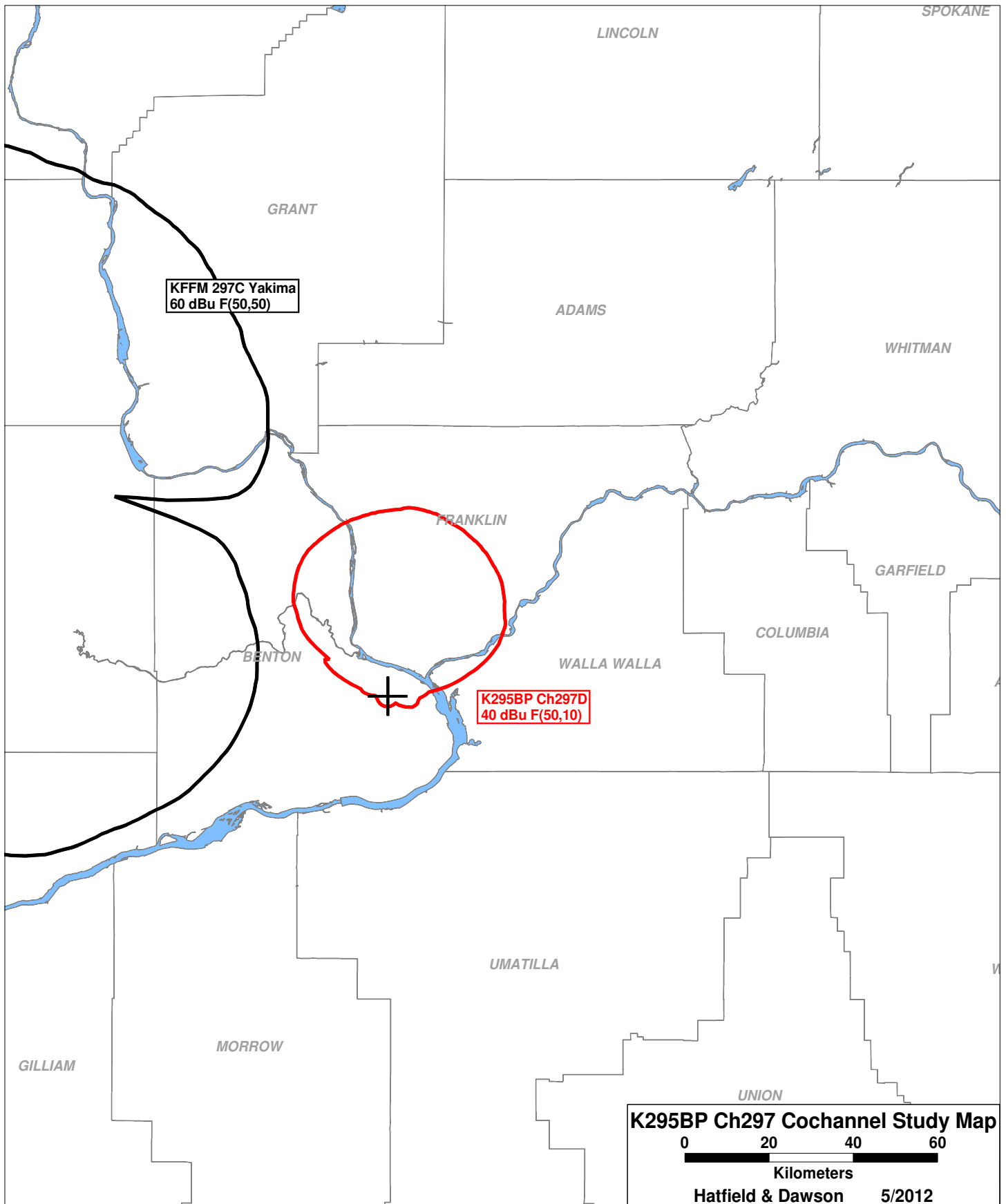
Longitude: 119 9 13

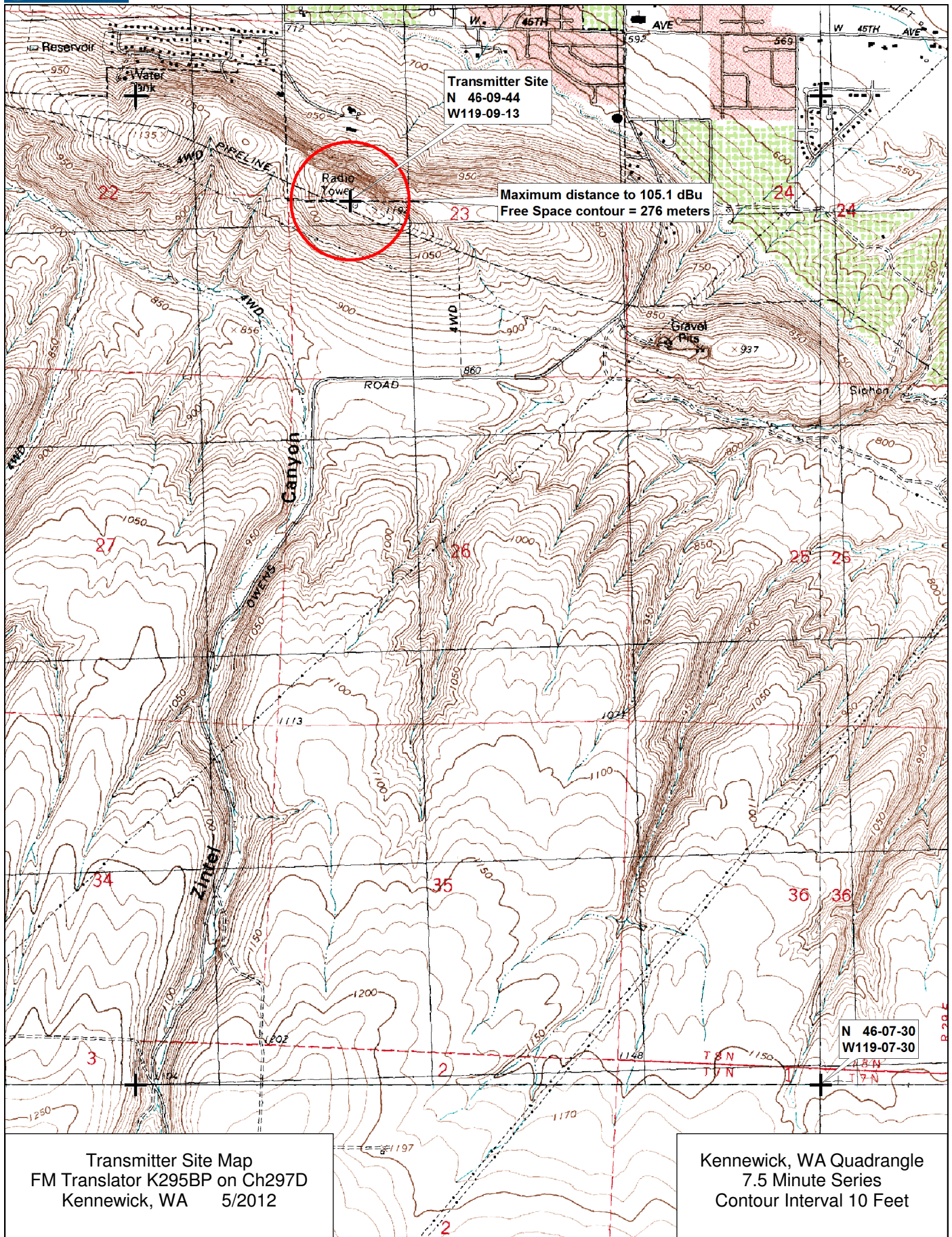
Safety Zone: 50 km

Job Title: KENNEWICK 297D

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KMMG LIC	BENTON CITY WA	BLH-60718ACV	244A 96.7	0.820 271.0	46-14-04 119-19-13	302.1	15.16 5.16	10 CLOSE
K295BP LIC	KENNEWICK WA	BLFT-10628ABV	295D 106.9	0.140 DA 270.0	46-09-43 119-09-15	234.2	0.05 0.00	0 TRANS
K295AV LIC	WALLA WALLA WA	BLFT-00512AIQ	295D 106.9	0.240 DA 720.0	45-59-38 118-10-47	103.6	77.63 0.00	0 TRANS
K295BP CP	OTHELLO WA	BPFT-11219AAF	296D 107.1	0.200 DA 268.0	46-09-43 119-09-15	234.2	0.05 0.00	0 TRANS
KFFMaux LIC	YAKIMA WA	BXLH-91001ABU	297C 107.3	0.300 419.0	46-38-26 120-23-45	299.6	109.33 0.00	0 AUX
KFFM LIC	YAKIMA WA	BLH-90915AVQ	297C 107.3	100.000 461.0	46-38-26 120-23-45	299.6	109.33 -116.67	226 SHORT
KWVN-FM LIC	PENDLETON OR	BLH-50711ABV	299C1 107.7	75.000 340.0	45-35-27 118-34-47	144.8	77.58 2.58	75 CLOSE
K300AP LIC	SUNNYSIDE WA	BLFT-70321ADY	300D 107.9	0.050 216.0	46-18-43 120-04-53	283.5	73.47 0.00	0 TRANS

===== END OF FM SPACING STUDY FOR CHANNEL 297 =====

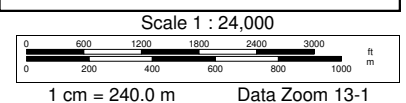




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May 2012
FM Translator K295BP
Kennewick, WA Channel 297D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 297D (107.3 MHz) with a maximum lobe effective radiated power of 50 watts. Operation is proposed with an antenna to be mounted on an existing structure.

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.

Since FMModel does not include an element model for the Scala CL-FMV antenna to be used, calculations of the power density produced by the proposed K295BP antenna system assume a Type 1 element model, which is the "worst case" element model. The highest calculated ground level power density occurs at a distance of 2 meters from the base of the antenna support structure. At this point the power density is calculated to be 24.9 $\mu W/cm^2$, which is 12.5% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

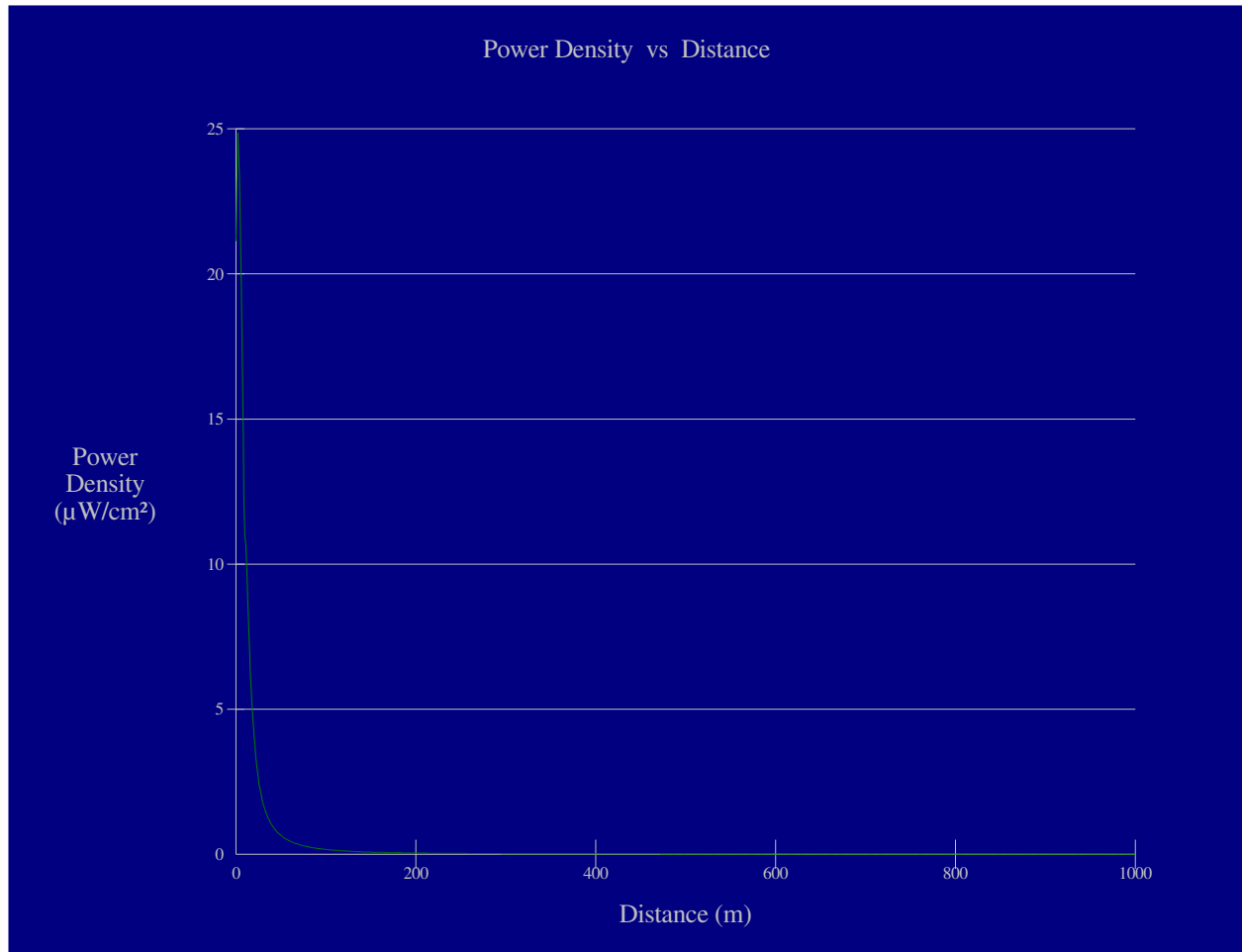
Calculations of the power density produced by K295BP and the other stations at this transmitter site are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pop FCC Limit	% of Limit
K295BP 297D App	0.050 kW V only Scala CL-FMV	FMMModel	10 m	24.9 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	12.5%
K237DP	0.034 kW avg SWR FM1 ring-stub assumed	FMMModel	10 m	21.3 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	10.7%
K272ED	0.034 kW avg NIC BKG77 ring-stub assumed	FMMModel	10 m	21.3 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	10.7%
KBWU-LD Ch36 CP	5.6 kW avg SCA 4DR-16-2HW	0.112	8 m	65.2 $\mu\text{W}/\text{cm}^2$	401 $\mu\text{W}/\text{cm}^2$	16.3%

(For TV translators, the relative field value indicated is the maximum value which occurs at 45 degrees or more below the horizontal, based on the manufacturer's vertical plane pattern. The resulting adjusted ERP value is assumed to be radiated straight down to a point 2 meters above ground level at the base of the tower.)

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K295BP and the present operation of the other stations authorized at this site (were their maxima to coincide, which they do not) is 50.2% of the FCC standard for uncontrolled environments.

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

K295BP Ch297D Kennewick

Antenna Type: Scala CL-FMV (dipole element model used for this study)

No. of Elements: 1

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: zero kW

Vertical ERP: 0.050 kW

Antenna Height: 10 meters AGL

Maximum Calculated Power Density is $24.9 \mu\text{W}/\text{cm}^2$ at 2 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers