

**January 2016  
FM Translator K297BE  
Kennewick, Washington Channel 295D  
Allocation Study**

**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 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.

***KEGX 293C0 Richland***

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KEGX 293C0 Richland. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

<b>Protected Station</b>	<b>Distance &amp; Bearing to Proposal</b>	<b>Station ERP and HAAT on that azimuth</b>	<b>Station Field Strength at Proposal</b>	<b>Corresponding Translator Interfering Contour</b>	<b>Distance to Translator Interfering Contour</b>
KEGX 293C0 Richland	7.26 km 344 deg True	100 kW 525 meters	107.4 dBu F(50,50)	147.4 dBu	4.7 meters Free Space

The 4.7 meter radius from the antenna does not reach ground level. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KEGX.

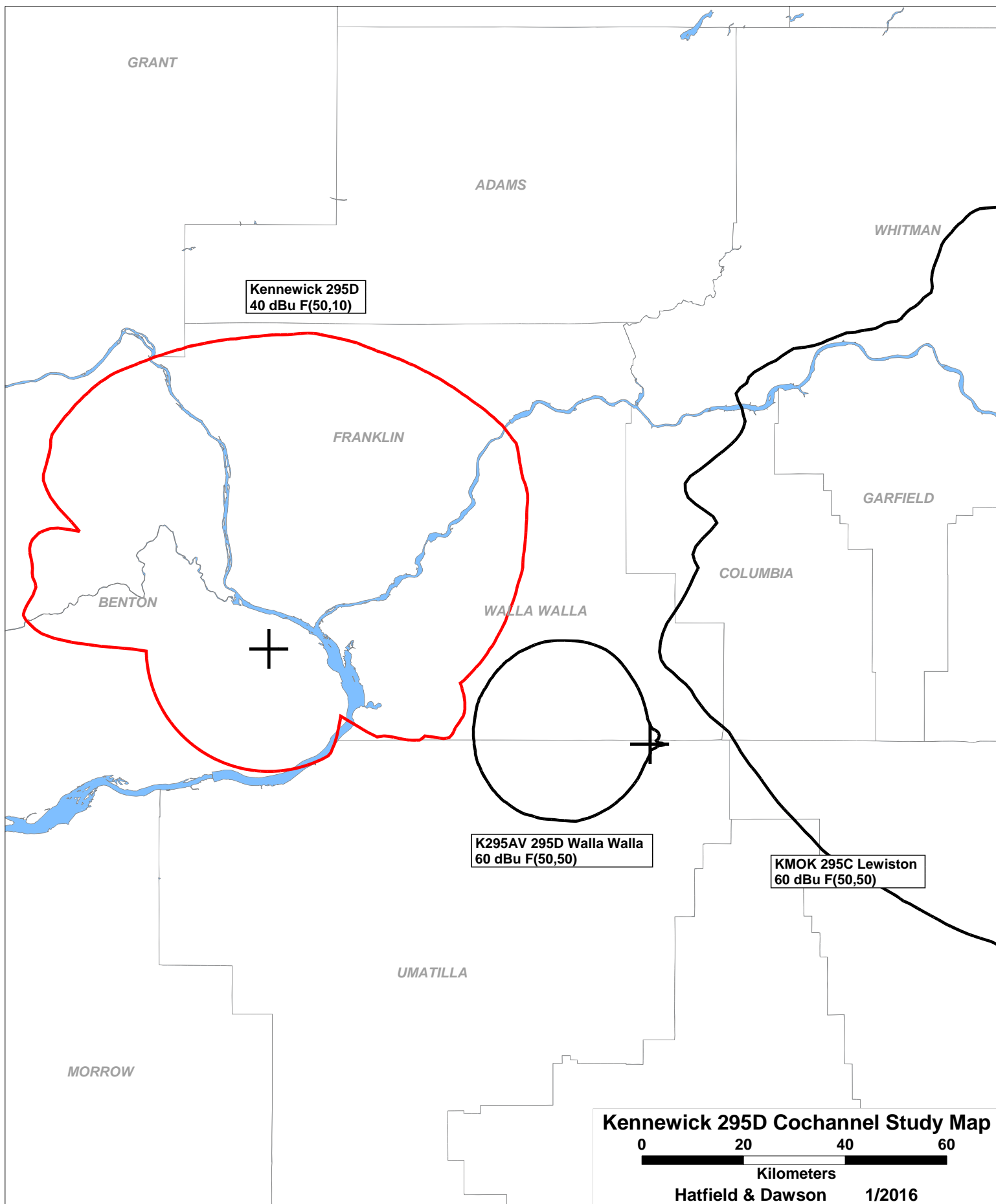
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SEARCH PARAMETERS                               FM Database Date: 160115
Channel: 295A      106.9 MHz                      Page 1
Latitude: 46 9 44
Longitude: 119 9 13
Safety Zone: 50 km
Job Title: KENNEWICK 295
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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KEGX LIC	RICHLAND WA	BLH-60804AFO	293C0 106.5	100.000 424.4	46-05-58 119-07-40	164.1	7.26 -78.74	86 SHORT
KMOK LIC	LEWISTON ID	BLH-830321AW	295C 106.9	99.000 375.0	46-27-33 117-02-18	77.7	166.25 -59.75	226 SHORT
VAC	ARLINGTON OR	RM-11242	295C2 106.9	0.000 0.0	45-33-52 120-19-00	234.0	112.12 -53.88	166 SHORT
NEW APP	ARLINGTON OR	BSFH-50527ADM	295C2 106.9	0.000 0.0	45-33-52 120-19-00	234.0	112.12 -53.88	166 SHORT
K295CE CP	THE DALLES OR	BNPFT-30829AIC	295D 106.9	0.010 812.0	45-42-44 121-06-51	252.4	160.06 0.00	0 TRANS
K295AU LIC	MOSES LAKE WA	BLFT-70618ACE	295D 106.9	0.250 69.0	47-05-15 119-15-25	355.7	103.16 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
K295BT LIC	WAPATO WA	BLFT-50309AGI	295D 106.9	0.250 299.0	46-31-55 120-27-14	292.9	108.20 0.00	0 TRANS
KIPC-LP APP	PENDLETON OR	BMPL-50611ADR	296L1 107.1	0.100 28.0	45-41-20 118-50-29	155.2	57.92 0.00	0 LPFM
K297BE LIC	KENNEWICK WA	BLFT-20815AAB	297D 107.3	0.050 DA 259.0	46-09-44 119-09-13	0.0	0.00 0.00	0 TRANS
KTNH-LP LIC	WALLA WALLA WA	BLL-50728ACO	297L1 107.3	0.100 4.0	46-01-24 118-21-17	103.8	63.68 0.00	0 LPFM
KTNH-LP CP MOD	WALLA WALLA WA	BMPL-50728ACM	297L1 107.3	0.100 3.6	46-01-24 118-21-17	103.8	63.68 0.00	0 LPFM
KFFM LIC	YAKIMA WA	BLH-90915AVQ	297C 107.3	100.000 461.0	46-38-26 120-23-45	299.6	109.33 14.33	95 CLEAR

===== END OF FM SPACING STUDY FOR CHANNEL 295 =====



**January 2016**  
**FM Translator K297BE**  
**Kennewick, Washington Channel 295D**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 295D (106.9 MHz) with a maximum lobe effective radiated power of 250 watts. Operation is proposed with an antenna to be mounted on an existing structure where the K297BE license facility is located.

The proposed antenna support structure will 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.

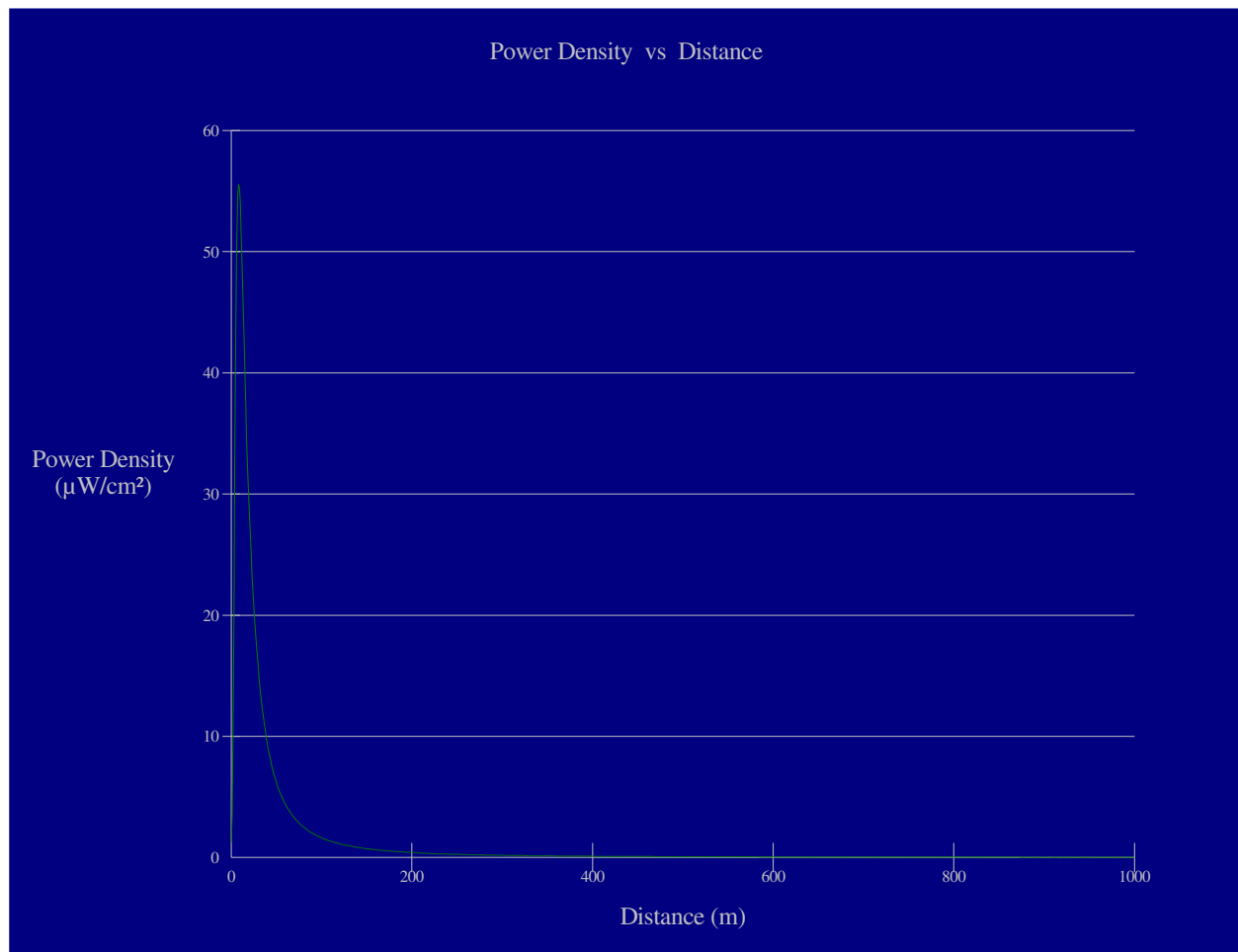
Calculations of the power density produced by the proposed antenna system assume a Type 6 element pattern, which is the element pattern for the Shively antenna proposed for use. The highest calculated ground level power density occurs at a distance of 8 meters from the base of the antenna support structure. At this point the power density is calculated to be 55.6  $\mu W/cm^2$ .

Calculations of the power density produced by K297BE 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 Pub FCC Limit	% of Limit
K297BE Ch295	0.250 kW H 0.250 kW V SHI 6810-1	FMModel	10 m	55.6 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	27.8%
K237DP	0.010 kW H 0.010 kW V SWR FM1 ring stub assumed	FMModel	10 m	6.3 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	3.2%
K272ED	0.010 kW H 0.010 kW V NIC BKG77 ring stub assumed	FMModel	10 m	6.3 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	3.2%

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K297BE and the present operation of the other broadcast facilities at this site (were their maxima to coincide, which they do not) is  $68.2 \mu\text{W}/\text{cm}^2$ , which is 34.1% of  $200 \mu\text{W}/\text{cm}^2$  (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 exposure in excess of FCC guidelines.



### Ground-Level RF Exposure

OET FMModel

#### Kennewick 295D

Antenna Type: Shively 6810  
No. of Elements: 1  
Element Spacing: 1.0 wavelength

Distance: 1000 meters  
Horizontal ERP: 0.250 kW  
Vertical ERP: 0.250 kW

Antenna Height: 10 meters AGL

Maximum Calculated Power Density is  $55.6 \mu\text{W}/\text{cm}^2$  at 8 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers