

August 2013
FM Translator K283BX
Wapato, Washington Channel 283D
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 proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KXDD 281C1 Yakima. The proposed site is 0.05 km from the KXDD transmitter site, so we have assumed a distance of 0.1 km for the sake of these calculations. Given the KXDD directional antenna's minimum ERP of 31.55 kW, KXDD places a 141.9 dBu contour at the translator transmitter site per a Free Space calculation. The corresponding interfering contour from the translator is $141.9 + 40 = 181.9$ dBu. This contour extends at most 0.1 meters from the translator antenna per a Free Space calculation and 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 KXDD.

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KYXE 285A Union Gap. The proposed facility will be on the same tower as the KYXE antenna, so we have assumed a distance of 0.1 km for the sake of these calculations. Given the KYXE ERP of 0.680 kW, KYXE places a 125.2 dBu contour at the translator transmitter site per a Free Space calculation. The corresponding interfering contour from the translator is $125.2 + 40 = 165.2$ dBu. This contour extends at most 0.6 meters from the translator antenna per a Free Space calculation and 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 KYXE.

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.

LPFM Preclusion Study Not Required

The proposed transmitter site is not located within the 39 km buffer of any defined Market Grid from the LPFM *Fourth Report and Order*; the nearest Market Grid is over 150 kilometers distant. Nor is the transmitter site at an out-of-grid location within a Top-50 Spectrum Limited Market. Therefore, no preclusion study is required as a part of this application.

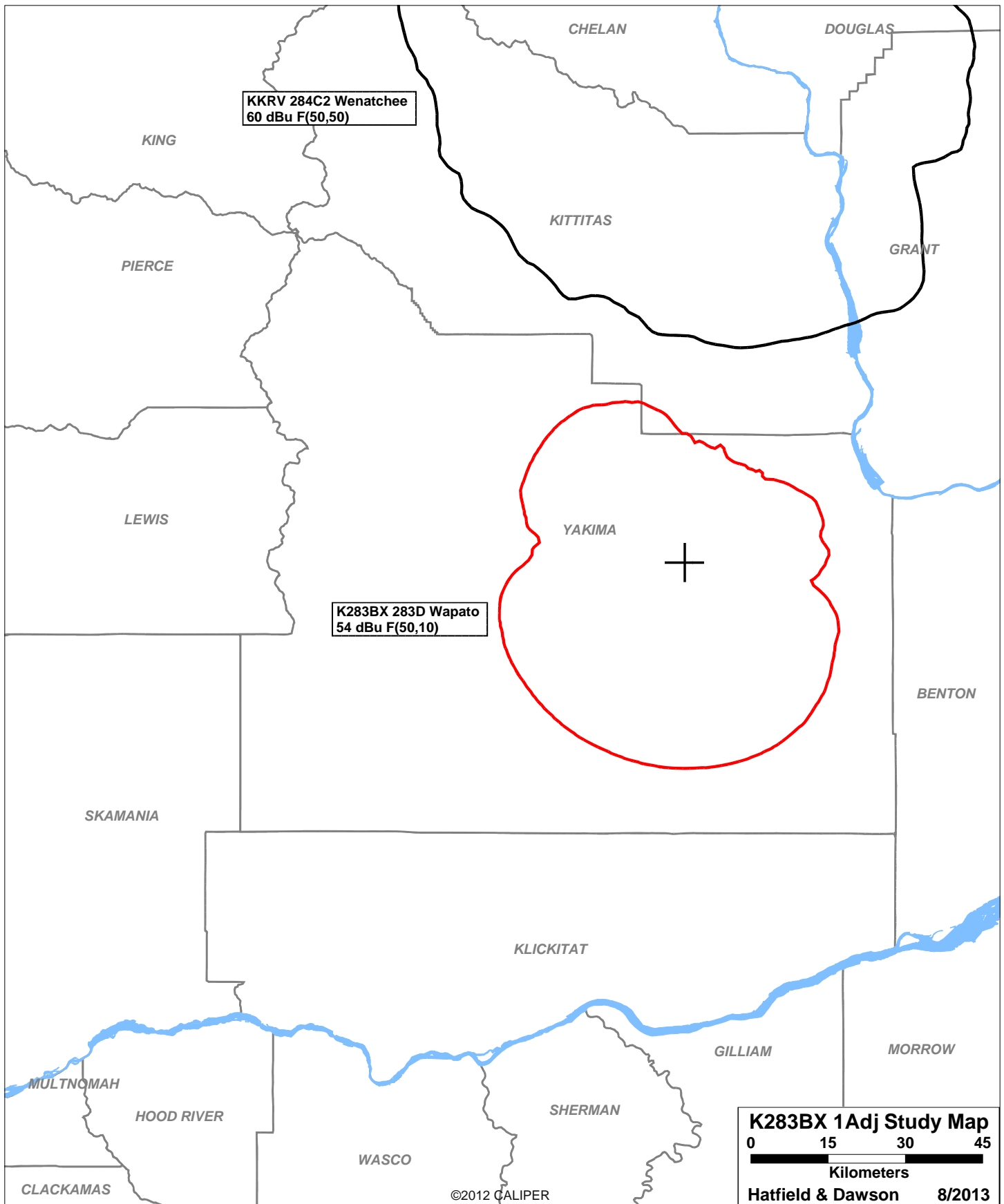
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SEARCH PARAMETERS FM Database Date: 130805

Channel: 283A 104.5 MHz
 Latitude: 46 30 48
 Longitude: 120 24 3
 Safety Zone: 50 km
 Job Title: K283BX WAPATO
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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)
K229AD LIC	YAKIMA WA	BLFT-30815ADU	229D 93.7	0.035 0.0	46-37-49 120-32-01	322.1	16.51 0.00	0 TRANS
KXDD LIC	YAKIMA WA	BLH-20305AAX	281C1 104.1	100.000 245.0	46-30-48 120-24-05	306.0 SS	0.05 -74.95	75 SHORT
ABSOLUTE MINIMUM 73.215 SPACING = 69 KM								
K282AA LIC	KENNEWICK, ETC. (OR) WA	BRFT-840723ND	282D 104.3	0.274 525.0	46-06-15 119-07-46	114.5	107.99 0.00	0 TRANS
VAC	MORO OR	RM-10663	283C2 104.5	0.000 0.0	45-29-03 120-43-48	192.6	117.20 -48.80	166 SHORT
KMCQ LIC	COVINGTON WA	BLH-00125AEW	283C2 104.5	7.100 388.0	47-32-35 122-06-25	312.1	172.99 6.99	166 CLOSE
K283BX CP	MABTON WA	BNPFT-30322AHW	283D 104.5	0.062 199.0	46-18-43 120-04-53	132.3	33.23 0.00	0 TRANS
K283BU LIC	WALLA WALLA WA	BLFT-30701ACR	283D 104.5	0.250 127.0	46-04-02 118-24-05	107.2	161.86 0.00	0 TRANS
KKRV LIC	WENATCHEE WA	BLH-20205AAA	284C2 104.7	6.500 403.0	47-28-44 120-12-49	7.5	108.28 2.28	106 CLOSE
KYXE LIC	UNION GAP WA	BLH-21010ACI	285A 104.9	0.680 297.0	46-30-48 120-24-03	0.0	0.00 -31.00	31 SHORT

===== END OF FM SPACING STUDY FOR CHANNEL 283 =====



KKRV 284C2 Wenatchee
60 dBu F(50,50)

K283BX 283D Wapato
54 dBu F(50,10)

K283BX 1Adj Study Map
0 15 30 45
Kilometers
Hatfield & Dawson 8/2013

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Wapato, Washington Channel 283D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 283D (104.5 MHz) with an effective radiated power of 250 watts. Operation is proposed with an antenna to be mounted on an existing tower with FCC Antenna Structure Registration Number 1232764. Combined operation is proposed with K291BV and K295BT.

RF Exposure Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

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.

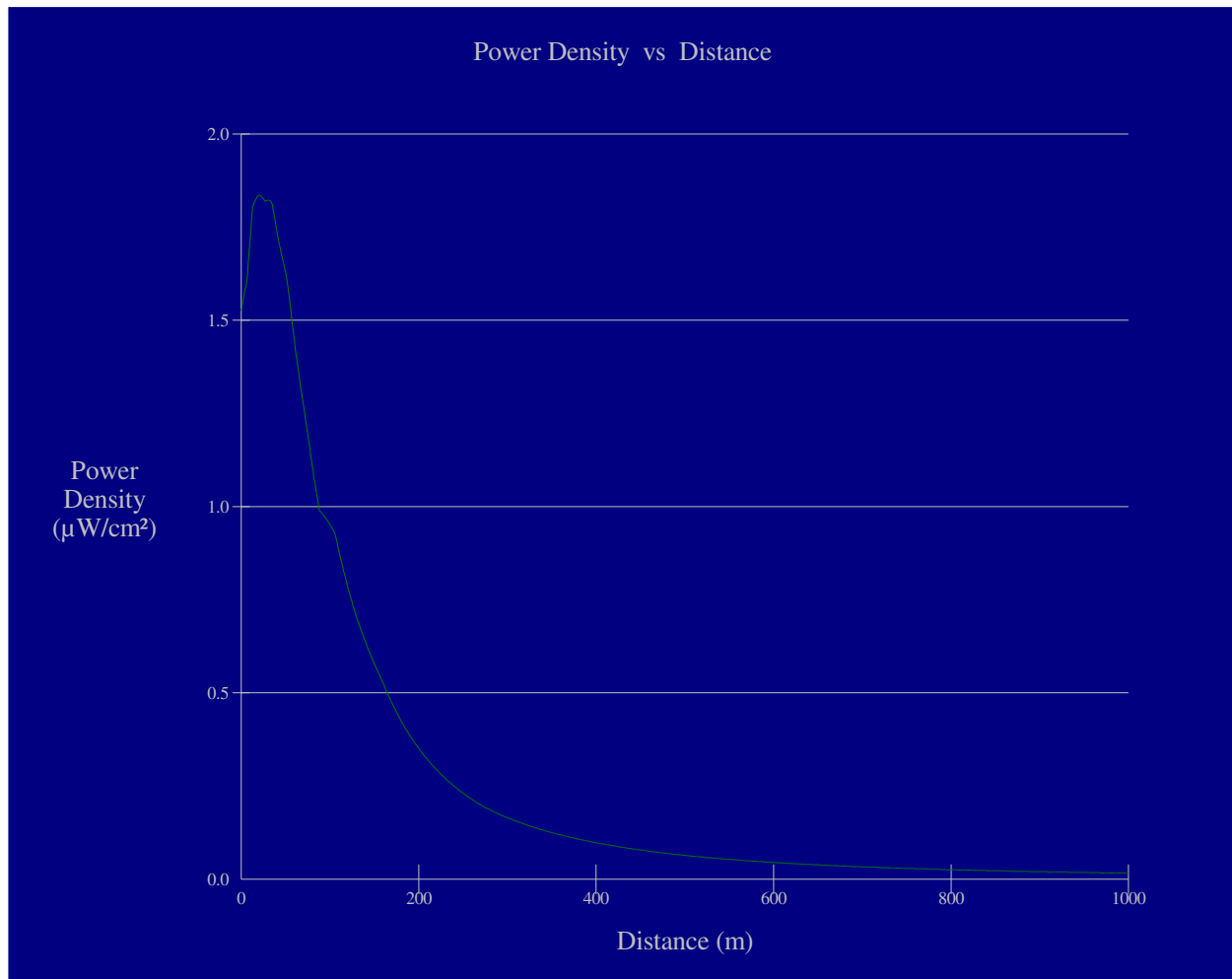
Calculations of the power density produced by the proposed antenna system assume a Type 1

Hatfield & Dawson Consulting Engineers

element pattern, which is the appropriate element pattern for the OMB MP-1 antenna proposed for use. The highest calculated ground level power density occurs at a distance of 20 meters from the base of the antenna support structure. At this point the power density is calculated to be $1.8 \mu\text{W}/\text{cm}^2$, which is 0.9% of $200 \mu\text{W}/\text{cm}^2$ (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 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 applicants 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

K283BX Wapato

Antenna Type: OMB MP-1 (ring stub assumed)

No. of Elements: 1

Element Spacing: 1.0 wavelength

Distance: 1000 meters

Horizontal ERP: 0.250 kW

Vertical ERP: 0.250 kW

Antenna Height: 76 meters AGL

Maximum Calculated Power Density is $1.8 \mu\text{W}/\text{cm}^2$ at 20 meters from the antenna structure.