

November 2019
FM Translator K291CD
Centralia, Washington Channel 292D
Allocation Study

Allocation Study

The instant application proposes a minor modification of FM translator K291CD, from Channel 291D to 292D, with no change in transmitter site.

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 maps demonstrate 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.

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SEARCH PARAMETERS

Channel: 292A 106.3 MHz
 Latitude: 46 43 51.3 (NAD27)
 Longitude: 123 1 29.2
 Safety Zone: 50 km
 Job Title: CENTRALIA 292

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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)
KJET-FM1 LIC	ABERDEEN WA	BLFTB-81109ACS	289D 105.7	1.500 0.0	46-56-55 123-49-12	292.1	65.31 0.00	0 BOOST
K289BZ LIC	GIG HARBOR WA	BLFT-50213AAP	289D 105.7	0.060 121.0	47-20-19 122-36-06	25.2	74.82 0.00	0 TRANS
K289AK LIC	ORTING WA	BMLFT-40721ACN	289D 105.7	0.009 517.0	47-02-52 122-08-33	62.0	75.91 0.00	0 TRANS
KJET LIC	RAYMOND WA	BLH-80423AEJ	289C2 105.7	13.500 290.0	46-41-44 123-46-17	266.3 SS	57.22 2.22	55 CLOSE
K289CQ LIC	TUMWATER WA	BLFT-80827AAB	289D 105.7	0.015 0.0	46-58-24 123-08-11	342.6	28.26 0.00	0 TRANS
KJET CP	UNION WA	BPH-90128AAS	289C2 105.7	1.750 664.0	47-18-46 123-22-15	338.1 SS	69.83 14.83	55 CLEAR
K291CD LIC	CENTRALIA WA	BLFT-50826ABQ	291D 106.1	0.180 80.0	46-43-52 123-01-28	49.6	0.03 0.00	0 TRANS
K291BY LIC	RAYMOND WA	BLFT-80925ACH	291D 106.1	0.250 365.0	46-41-44 123-46-17	266.3	57.22 0.00	0 TRANS
KBKS-FM LIC	TACOMA WA	BLH-01023AFA	291C 106.1	73.000 698.0	47-30-17 121-58-04	42.5	117.62 -47.38	165 SHORT
CFVE-FM	VANCOUVER BC	-60523CAN	292C 106.3	9.000 600.0	49-21-17 122-57-25	1.0	291.79 44.79	247 CLEAR
K292GZ LIC	ASTORIA OR	BLFT-60630ABL	292D 106.3	0.250 208.0	46-10-56 123-48-10	224.6	85.40 0.00	0 TRANS
KLOO-FM LIC	CORVALLIS OR	BMLH-40324AAA	292C 106.3	100.000 347.0	44-38-47 123-16-10	184.8	232.47 6.47	226 CLOSE
K292HH LIC	PORTLAND OR	BLFT-80913AAQ	292D 106.3	0.099 387.0	45-29-20 122-41-40	169.4	140.40 0.00	0 TRANS
KAHS-LP LIC	ABERDEEN WA	BLL-00615AER	293L1 106.5	0.100 -20.7	46-58-50 123-49-02	295.0	66.50 0.00	0 LPFM

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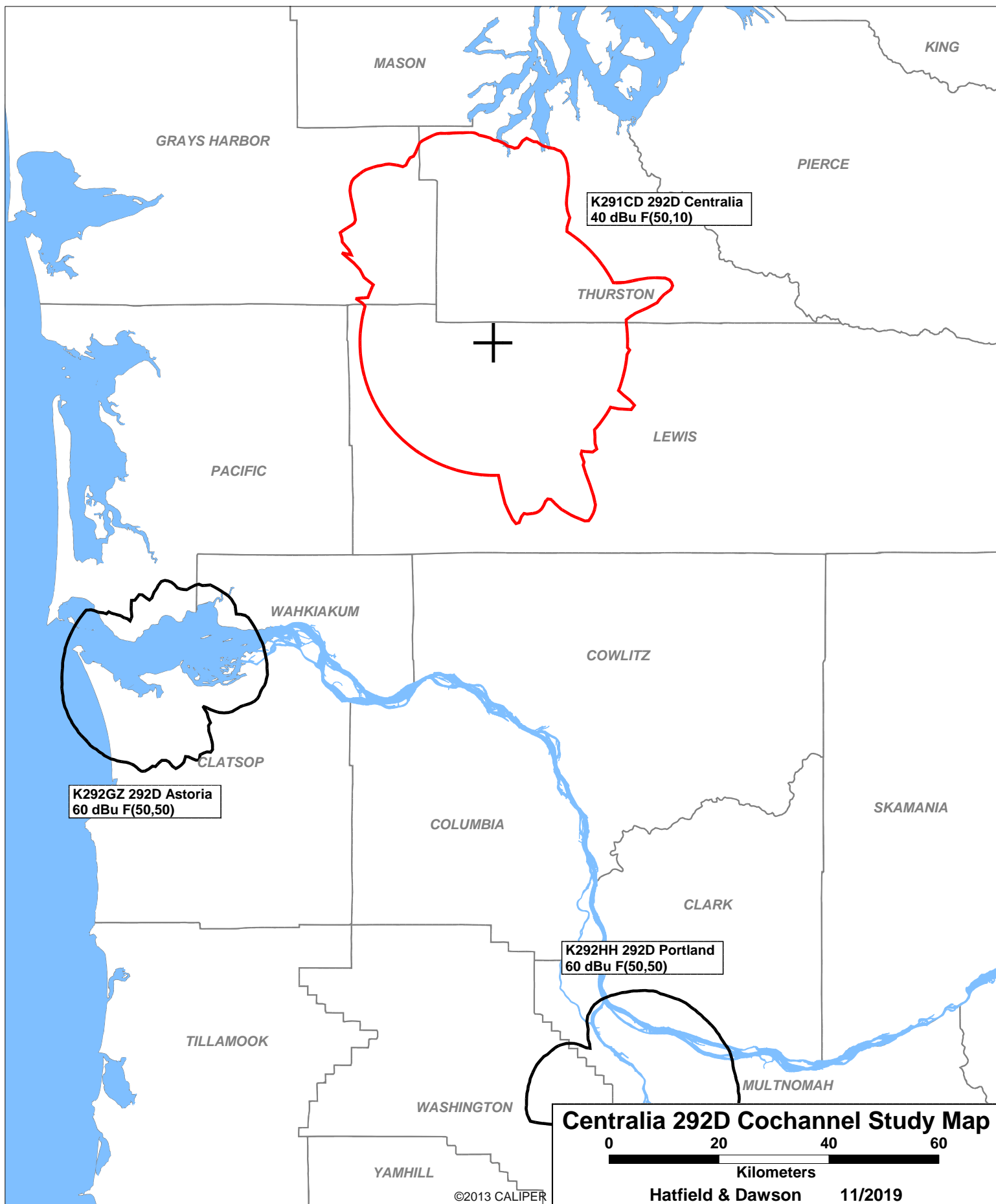
SEARCH PARAMETERS

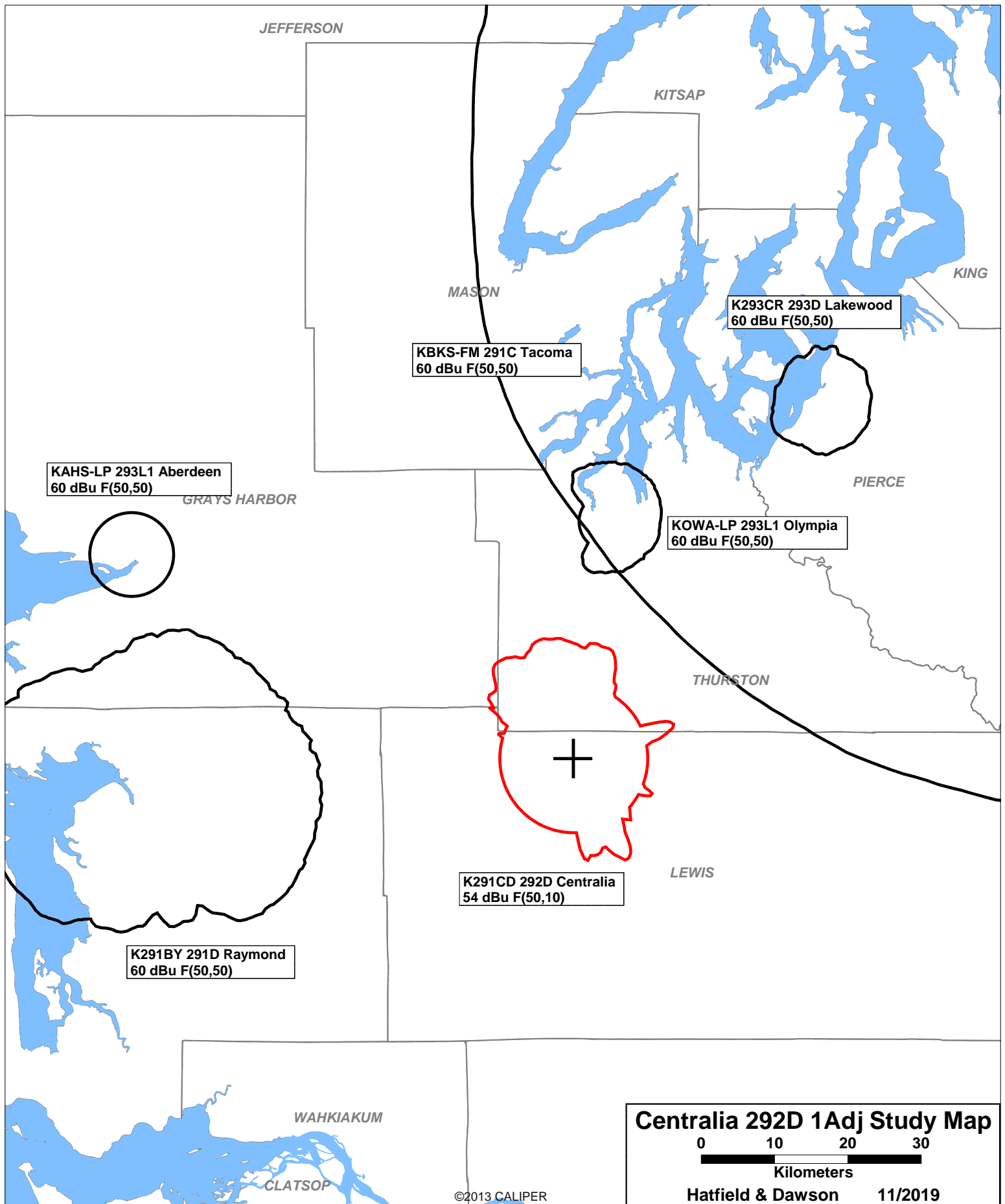
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 Job Title: CENTRALIA 292

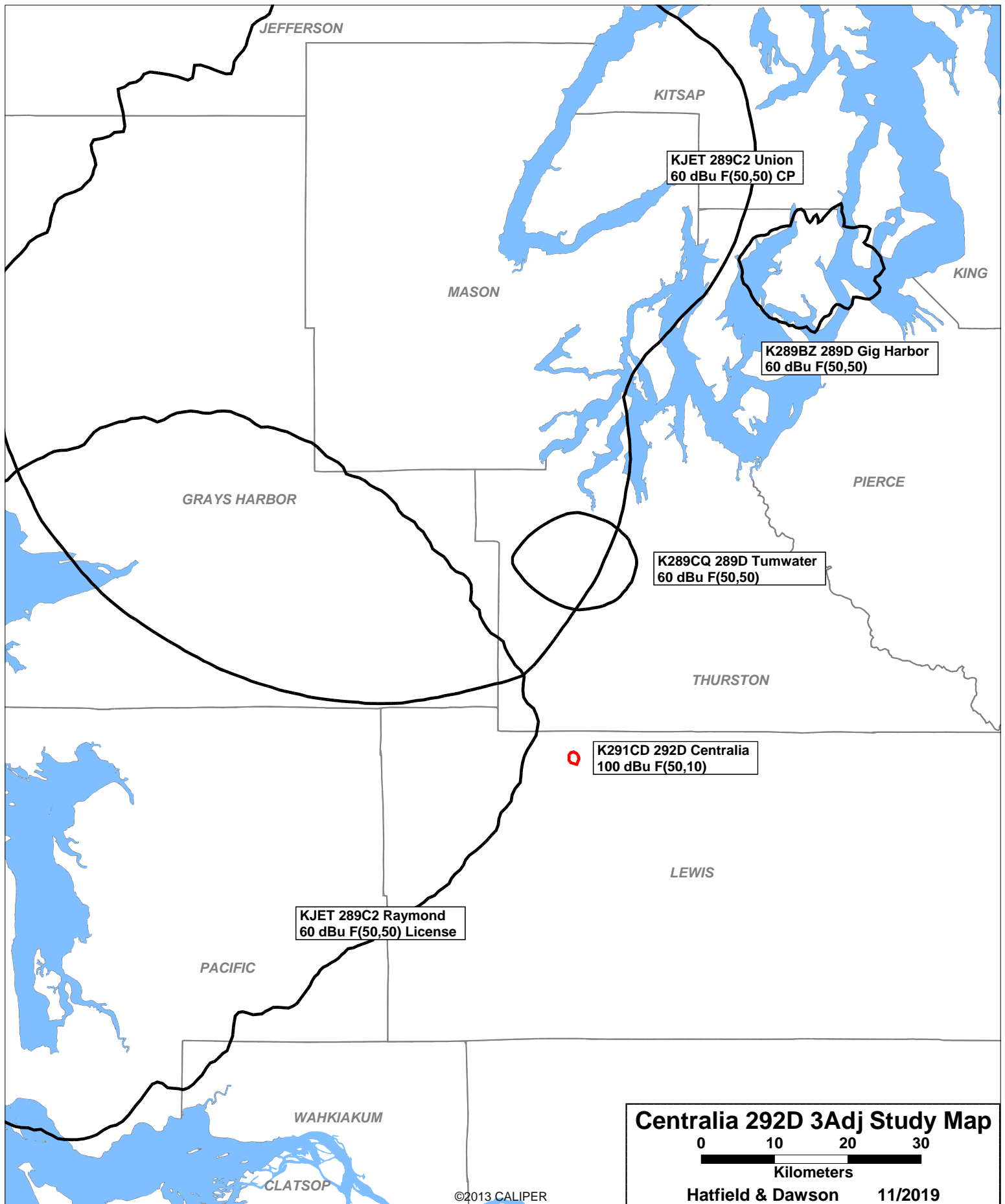
Page 2

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
K293AY LIC	ENUMCLAW WA	BMLFT-61103AAV	293D 106.5	0.010 921.0	47-13-10 121-50-30	58.4	105.14 0.00	0 TRANS
K293CR CP	LAKEWOOD WA	BNPFT-71201ABH	293D 106.5	0.025 DA 176.0	47-09-39 122-34-35	35.3	58.73 0.00	0 TRANS
KOWA-LP LIC	OLYMPIA WA	BLL-40816AAB	293L1 106.5	0.022 62.0	47-01-15 122-57-50	8.1	32.56 0.00	0 LPFM
KQWZ-LP LIC	SEATAC WA	BLL-70918AAG	293L1 106.5	0.020 66.0	47-23-21 122-18-01	36.6	91.57 0.00	0 LPFM
KLTH LIC	LAKE OSWEGO OR	BLH-00416AAO	294C 106.7	100.000 502.0	45-30-58 122-43-59	170.4	136.90 41.90	95 CLEAR
KTYG-LP LIC	CENTRALIA WA	BLL-70315AAD	294L1 106.7	0.100 6.7	46-44-24 122-59-19	69.9	2.94 0.00	0 LPFM
K295BO LIC	ABERDEEN WA	BLFT-30701ADB	295D 106.9	0.125 DA 136.0	46-59-18 123-47-42	296.3	65.34 0.00	0 TRANS
KRWM LIC	BREMERTON WA	BLH-50825AAK	295C1 106.9	49.000 DA 397.0	47-32-37 122-06-27	37.2 SS	114.04 39.04	75 CLEAR

===== END OF FM SPACING STUDY FOR CHANNEL 292 =====







November 2019
FM Translator K291CD
Centralia, Washington Channel 292D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 292D (106.3 MHz) with an effective radiated power of 250 watts. Operation is proposed with the existing K291CD dipole antenna which is mounted on an existing tower on Cook Hill, with FCC Antenna Structure Registration Number 1062288.

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 element pattern for the Scala FMV antenna proposed for use. The highest calculated ground level power density occurs at a distance of 6 meters from the base of the antenna support structure. At this point the power density is calculated to be 12.7 $\mu W/cm^2$.

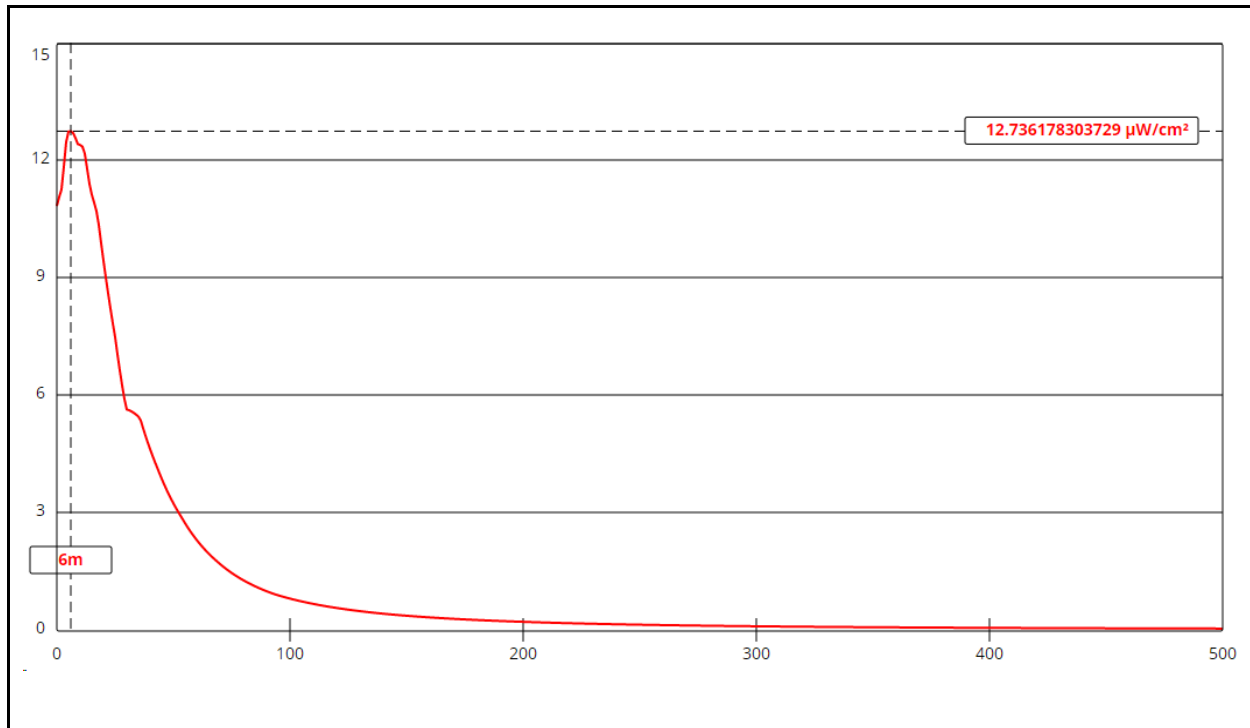
Calculations of the power density produced by Centralia 292D and the other stations at this transmitter site are summarized in the following table:

Hatfield & Dawson Consulting Engineers

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Max Exposure	Gen Pub FCC Limit	% of Limit
K291CD Ch292 App	0.250 kW V SCA FMV-1	FMMModel Type 1	27 m	12.7 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	6.4%
KACS 213A	6 kW H 6 kW V SHI 6810-2D-DA	FMMModel Type 1	54 m	88.4 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	44.2%
K259BG	0.25 kW V SCA FMV-1	FMMModel (Type 1)	46 m	4.1 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	2.1%
Total						52.7%

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of Centralia 292D and the present operation of the other stations at this site (were their maxima to coincide, which they do not) is 52.7% 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

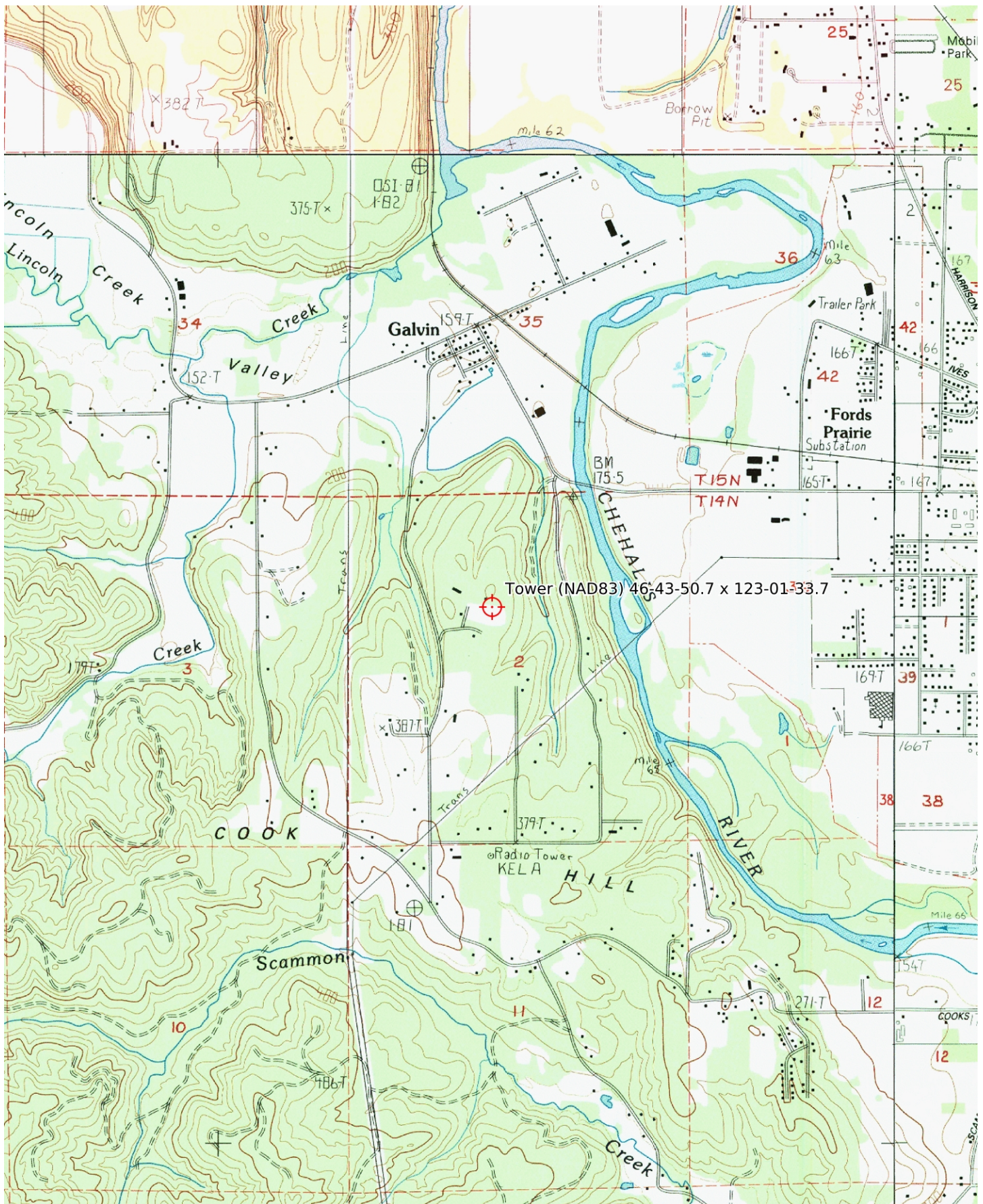
Centralia 292D

Antenna Type: Scala FMV-1 (Type 1)
No. of Elements: 1
Element Spacing: 1.0 wavelength

Distance: 500 meters
Horizontal ERP: zero W
Vertical ERP: 250 W

Antenna Height: 27 meters AGL

Maximum Calculated Power Density is $12.7 \mu\text{W}/\text{cm}^2$ at 6 meters from the antenna structure.



Mercator Projection
WGS84
USNG 10TDS-10TES
CalTopo

