

THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE
MICHAEL H. MEHIGAN, PE

JAMES B. HATFIELD, PE
BENJAMIN F. DAWSON III, PE
CONSULTANTS

HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
9500 GREENWOOD AVE. N.
SEATTLE, WASHINGTON 98103

TELEPHONE (206) 783-9151
FACSIMILE (206) 789-9834
E-MAIL hatdaw@hatdaw.com

MAURY L. HATFIELD, PE
(1942-2009)
PAUL W. LEONARD, PE
(1925-2011)

**Engineering Statement
Post-Auction Technical Facilities for KXLN-DT
Channel 30 at Rosenberg, TX
October 2017**

Expansion Application

This Engineering Statement has been prepared on behalf of KXLN License Partnership, L.P., licensee of digital television station KXLN-DT at Rosenberg, Texas. KXLN-DT presently operates on Channel 45. The Commission's *Channel Reassignment Public Notice* (DA 17-314), released on April 13, 2017, specified the station's post-auction facilities on Channel 30.

This application specifies expansion facilities, and is being filed during the second filing window for alternate channels and expanded facilities.

Compliance with §73.622(f) *DTV maximum power and antenna heights*

Processing is requested pursuant to the provisions of §73.622(f)(5), which allows for technical facilities up to those needed to provide the same geographic coverage as the largest station within the market.

The table below demonstrates that the geographic coverage of the proposed noise limited contour will not exceed that of the largest station within the Houston market.

	Geographic Coverage in United States (km ²)
KXLN-DT Ch30 1000 kW at 592m HAAT	40,371.8
KPRC-TV Ch35 1000 kW at 585m HAAT	45,425.1

Interference Study

An interference study has been conducted using the Commission's TVStudy software. The results of the study demonstrate that this proposal will have no additional interference impact on other stations.

Study created: 2017.10.20 11:15:31

Study build station data: LMS TV 2017-10-19 (54)

Proposal: KXLN-DT D30 DT APP ROSENBERG, TX
 File number: KXLN-XP
 Facility ID: 53847
 Station data: User record
 Record ID: 272
 Country: U.S.
 Zone: III

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
KITU-TV	D29	DT	CP	BEAUMONT, TX	BLANK0000028179	168.9 km
KITU-TV	D29	DT	BL	BEAUMONT, TX	DTVBL12896	168.9
KYLE-TV	D29	DT	CP	BRYAN, TX	BLANK0000028463	152.9
KYLE-TV	D29	DT	BL	BRYAN, TX	DTVBL60384	153.1
KPLE-CD	D30	DC	LIC	KILLEEN, TX	BLDTL20090416ASY	272.9
KPLE-CD	D30	DC	CP	KILLEEN, TX	BPDTA20130211ACF	272.9
KABB	D30	DT	LIC	SAN ANTONIO, TX	BLCDT20100527AFI	268.9
KUBE-TV	D31	DT	CP	BAYTOWN, TX	BLANK0000028454	1.0
KUBE-TV	D31	DT	BL	BAYTOWN, TX	DTVBL70492	0.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D30
 Latitude: 29 33 45.20 N (NAD83)
 Longitude: 95 30 35.90 W
 Height AMSL: 611.4 m
 HAAT: 594.8 m
 Peak ERP: 1000 kW
 Antenna: ERI-ATW26H4-ETCX3-30H (ID 1001478) 0.0 deg
 Elev Pattn: Generic
 Elec Tilt: 1.0

40.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1000 kW	591.5 m	121.6 km
45.0	821	593.8	119.8
90.0	578	592.8	116.4
135.0	108	592.5	101.7
180.0	195	593.6	106.8
225.0	108	592.5	101.7
270.0	578	591.3	116.4
315.0	821	587.2	119.5

Hatfield & Dawson Consulting Engineers

Database HAAT does not agree with computed HAAT
Database HAAT: 595 m Computed HAAT: 592 m

ERP exceeds maximum
ERP: 1000 kW ERP maximum: 337 kW

**Proposal service area extends beyond baseline plus 1.0%
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 1765.2 km

Distance to Mexican border: 422.3 km

Conditions at FCC monitoring station: Kingsville TX
Bearing: 225.1 degrees Distance: 330.6 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 325.6 degrees Distance: 1468.3 km

Study cell size: 2.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

No IX check failures found.

Facilities Proposed

The proposed operation will be on Channel 30 with a maximum lobe effective radiated power of 1000 kilowatts (H pol) and 300 kilowatts (V-pol). Operation is proposed with an elliptically polarized ERI model ATW26H4-ETCX3-30H antenna, which will be mounted on an existing tower with FCC Antenna Structure Registration Number 1059622.

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.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (587 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.058 at these angles, based on the manufacturer's vertical plane pattern for the elliptically-polarized ERI model ATW26H4-ETCX3-30H antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 4373.2 watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be $0.4 \mu\text{W}/\text{cm}^2$, which is 0.1% of $377.3 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 30 frequency).

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 500 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.

Access to the tower site is restricted by a gated perimeter fence; another locked fence encloses the tower base area. Appropriate RF advisory signs are posted and a formal protection protocol is in effect for the protection of workers on the tower. 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.