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**Engineering Statement  
Displacement of KUNU-LD  
Channel 27 at Victoria, TX  
March 2018**

This Engineering Statement has been prepared on behalf of QueenB Television of Texas, LLC ("QueenB"), licensee of digital LPTV station KUNU-LD at Victoria, Texas. This material has been prepared in connection with a displacement application.

**I. Background**

The station currently operates on Channel 28. An interference study run on Channel 28 indicates that KUNU-LD will receive interference from repacked full-power station WOAI-TV on Channel 28 at San Antonio. The interference amounts to 2,369 persons from the WOAI-TV construction permit facility (see 0000025130) and 4,146 persons from the WOAI-TV application facility (see 0000033833). The location of this interference has been plotted, and found to affect a wide swath of rural coverage provided by KUNU-LD. Accordingly, QueenB is filing this displacement application during the Commission's Special Displacement Window, which is scheduled for April 10 to May 15, 2018.

**II. Interference Study**

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any authorized or pending proposed facilities. This study was performed using the Commission's TVStudy software.

Hatfield & Dawson Consulting Engineers

This study includes consideration of a displacement application for KXTS-LD Victoria, on Channel 26, which is also being filed during the Special Displacement Window.

It should be noted that this study was conducted using a cell size of 0.5 km and a profile point spacing of 0.5 km.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. Based on the foregoing interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Study created: 2018.03.23 15:06:05

Study build station data: LMS TV 2018-03-23 (105)

Proposal: KUNU-LD D27 LD APP VICTORIA, TX  
 File number: KUNU27-10KW  
 Facility ID: 57866  
 Station data: User record  
 Record ID: 538  
 Country: U.S.

Build options:  
 Protect pre-transition records not on baseline channel

User records included:  
 536 KXTS-LD D26 LD APP VICTORIA, TX KXTS26

Stations potentially affected by proposal:

| IX  | Call    | Chan | Svc | Status | City, State           | File Number        | Distance |
|-----|---------|------|-----|--------|-----------------------|--------------------|----------|
| No  | KRTX-LP | N20- | TX  | LIC    | SAN ANTONIO, TX       | BLTT19981014JC     | 159.0 km |
| No  | NEW     | D26  | LD  | APP    | CORPUS CHRISTI, TX    | BNPDTL20100716ADH  | 95.0     |
| No  | KRIV    | D26  | DT  | APP    | HOUSTON, TX           | BLANK0000035805    | 177.9    |
| No  | KRIV    | D26  | DT  | LIC    | HOUSTON, TX           | BLCDT20111212AHM   | 177.9    |
| No  | KPXL-TV | D26  | DT  | LIC    | UVALDE, TX            | BLCDT20090612AHU   | 205.4    |
| No  | KXTS-LD | D26  | LD  | APP    | VICTORIA, TX          | KXTS26             | 0.0      |
| No  | KAOB-LD | D27  | LD  | LIC    | BEAUMONT, TX          | BLDTL20090910AAA   | 331.0    |
| No  | KODF-LD | D27  | LD  | LIC    | BRITTON, TX           | BLDTL20100324ACQ   | 416.4    |
| No  | KNWS-LP | D27  | LD  | CP     | BROWNSVILLE, TX       | BDISDTL20090630AAX | 302.0    |
| Yes | KORO    | D27  | DT  | LIC    | CORPUS CHRISTI, TX    | BLCDT20060626ACE   | 135.8    |
| No  | KDFI    | D27  | DT  | APP    | DALLAS, TX            | BLANK0000034507    | 415.9    |
| No  | KDFI    | D27  | DT  | CP     | DALLAS, TX            | BLANK0000027211    | 411.3    |
| No  | NEW     | D27  | LD  | APP    | DEL RIO, TX           | BNPDTL20090825BRO  | 367.0    |
| No  | K27JJ-D | D27  | LD  | LIC    | FORBES/JASPER CTY, TX | BLDTL20110610AAD   | 323.8    |
| No  | KDJB-LD | D27  | LD  | LIC    | HONDO, TX             | BLDTL20110706ABA   | 249.0    |
| No  | KXOF-CD | D27  | DC  | APP    | LAREDO, TX            | BMPDTA20120918AAW  | 277.1    |
| No  | KXOF-CD | D27z | DC  | LIC    | LAREDO, TX            | BLDTA20130115ACK   | 277.1    |
| Yes | KBVO    | D27  | DT  | LIC    | LLANO, TX             | BLCDT20090622ABA   | 246.5    |
| No  | KLUF-LP | D27- | LD  | CP     | LUFKIN, TX            | BLANK0000010680    | 363.1    |
| No  | KRZG-CD | D27  | DC  | APP    | MCALLEN, TX           | BLANK0000030680    | 309.8    |
| No  | KRZG-CD | D27  | DC  | CP     | MCALLEN, TX           | BLANK0000024451    | 309.8    |
| No  | KBTW-TV | D27  | DT  | CP     | PORT ARTHUR, TX       | BLANK0000034248    | 336.8    |
| No  | K27LF-D | D27  | DC  | LIC    | SAN ANTONIO, TX       | BLANK0000001558    | 120.5    |
| Yes | KNIC-CD | D27  | DC  | CP     | SAN ANTONIO, TX       | BLANK0000030591    | 147.1    |
| No  | K27LU-D | D27  | LD  | LIC    | STEPHENVILLE, TX      | BLDTL20140610AAO   | 397.2    |
| No  | KYLE-TV | D28  | DT  | LIC    | BRYAN, TX             | BLCDT20090612ABZ   | 215.6    |
| No  | K28LJ-D | D28  | LD  | CP     | CORPUS CHRISTI, TX    | BNPDTL20090825ALD  | 121.4    |
| No  | KYVV-TV | D28  | LD  | APP    | DEL RIO, TX           | BDRCTDT20101008AAW | 205.4    |
| No  | KUGB-CD | D28  | DC  | LIC    | HOUSTON, TX           | BLDTA20120801ALF   | 176.3    |
| Yes | WOAI-TV | D28  | DT  | CP     | SAN ANTONIO, TX       | BLANK0000025130    | 120.3    |
| Yes | WOAI-TV | D28  | DT  | APP    | SAN ANTONIO, TX       | BLANK0000033833    | 120.3    |
| No  | KSAA-LP | N28+ | TX  | LIC    | SAN ANTONIO, TX       | BLTTL20020122AAM   | 149.5    |
| No  | KVHM-LP | N31  | TX  | LIC    | VICTORIA, TX          | BLTTL19980616JF    | 16.1     |
| No  | KYDF-LP | N34+ | TX  | LIC    | CORPUS CHRISTI, TX    | BLTTL20071003AAH   | 119.1    |

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D27  
Mask: Full Service  
Latitude: 28 50 43.40 N (NAD83)  
Longitude: 97 7 34.00 W  
Height AMSL: 351.3 m  
HAAT: 0.0 m  
Peak ERP: 10.0 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 0.50

50.0 dBu contour:

| Azimuth | ERP     | HAAT    | Distance |
|---------|---------|---------|----------|
| 0.0 deg | 10.0 kW | 306.2 m | 54.8 km  |
| 45.0    | 10.0    | 313.9   | 55.2     |
| 90.0    | 10.0    | 322.7   | 55.6     |
| 135.0   | 10.0    | 325.3   | 55.8     |
| 180.0   | 10.0    | 317.3   | 55.4     |
| 225.0   | 10.0    | 312.4   | 55.1     |
| 270.0   | 10.0    | 304.0   | 54.6     |
| 315.0   | 10.0    | 293.7   | 54.1     |

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m    Computed HAAT: 312 m

Distance to Canadian border: 1922.8 km

\*\*Proposal is within coordination distance of Mexican border  
Distance to Mexican border: 273.5 km

Conditions at FCC monitoring station: Kingsville TX  
Bearing: 205.6 degrees    Distance: 172.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 331.6 degrees    Distance: 1454.6 km

Study cell size: 0.50 km  
Profile point spacing: 0.50 km

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

No IX check failures found.

### III. RF Exposure Study

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 (306 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 0.150 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Dielectric model TUA-O4SP-14/55H-1-T-R antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 225 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 from the proposed facility is calculated to be 0.1  $\mu W/cm^2$ , which is <0.1% of 365.3  $\mu W/cm^2$  (the FCC maximum for uncontrolled environments at the Channel 27 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KUNU-LD 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 applicant's 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.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. 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.

March 24, 2018

Erik C. Swanson, P.E.

## **Appendix A**

Interference study map of the licensed KUNU-LD Channel 28 facility from repacked full-power station WOAI-TV on Channel 28 at San Antonio

Green areas indicate KUNU-LD interference-free service

Pink areas indicate KUNU-LD interference from WOAI-TV application

Interference shown is from WOAI-28-App

## Ch28 Noise Limited Contour

