ENGINEERING EXHIBIT

Application for Minor Modification of Digital Low Power Television Station

prepared for

Gray Television Licensee, LLC
KYLX-LD Laredo, TX
Facility ID 40244
Ch. 13 (digital) 3 kW

Gray Television Licensee, LLC ("Gray") is the licensee of digital Low Power Television station KYLX-LD, Channel 13, Laredo TX, Facility ID 40244. KYLX-LD is licensed (file# 0000004538) to operate at 3 kW effective radiated power ("ERP") with a nondirectional antenna. *Gray* proposes herein a minor modification to relocate KYLX-LD to a different transmitting location, decrease antenna height, and utilize a directional antenna.

As proposed herein, KYLX-LD will be relocated a distance of 22.0 km (13.7 miles) to utilize an existing broadband transmitting antenna. The antenna is side-mounted on the KGNS-TV (Ch. 8, Laredo TX, Facility ID 10061) tower structure, which is associated with Antenna Structure Registration number 1045081. *Gray* is also licensee of KGNS-TV and owns the tower structure. No change to the structure's overall height is proposed.

The proposed KYLX-LD facility will operate with an elliptically polarized directional antenna at 3.0 kW ERP using a "full service" out of channel emission mask. A plot of the directional antenna's azimuthal pattern is supplied in Figure 1 Figure 2 depicts the 51 dBµ coverage contour of the licensed and proposed facilities, demonstrating compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69[1] shows that the proposal complies with the FCC's interference protection requirements toward all digital television, television translator, LPTV,

[1]FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's

and Class A stations (existing and post-auction). The results, summarized in Table 1, show that any new interference does not exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

The proposed site is located 1.5 km from the U.S. – Mexico border, and is thus within the zone requiring international coordination. According to "TVStudy" analysis including non-US records from current FCC LMS data, no interference to any relevant Mexican station is predicted.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed facility was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10) and 30 percent antenna relative field in downward elevations (pattern data shows less than 30 percent relative field at angles 15 – 90 degrees below the horizontal), the calculated power density attributable to the proposed facility at locations near the transmitter site at a height of two meters above ground level is 0.2 $\mu W/cm^2$, which is 0.1 percent of the general population / uncontrolled maximum permissible exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines. This exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

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current "TVStudy" software with the default application processing template settings, 1 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCCs implementation of TVStudy show excellent correlation.

List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

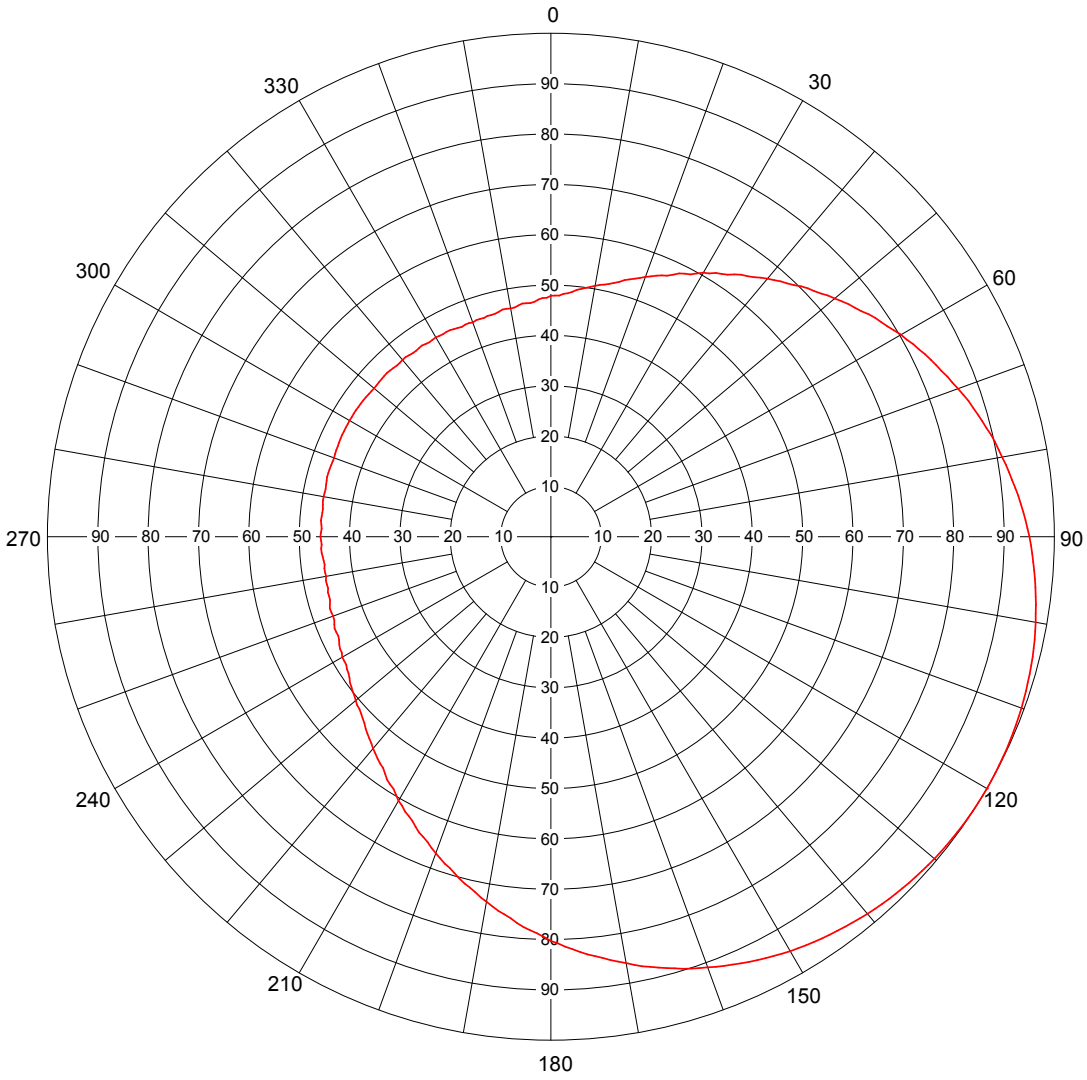
Chesapeake RF Consultants, LLC
Joseph M. Davis, P.E. August 26, 2019
207 Old Dominion Road Yorktown, VA 23692 703-650-9600

Dielectric

Date	**26 Aug 2019**		
Call Letters		Channel	
Location			
Customer			
Antenna Type			

AZIMUTH PATTERN

Gain	**2.00 (3.01 dB)**	Frequency	**MHz**
Calculated / Measured	**Calculated**	Drawing #	**TLSV4-H**



Remarks:

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Antenna Azimuthal Pattern
KYLX-LD Laredo, TX
Facility ID 40244
Ch. 13 (digital) 3 kW

prepared for
Gray Television Licensee, LLC

August, 2019

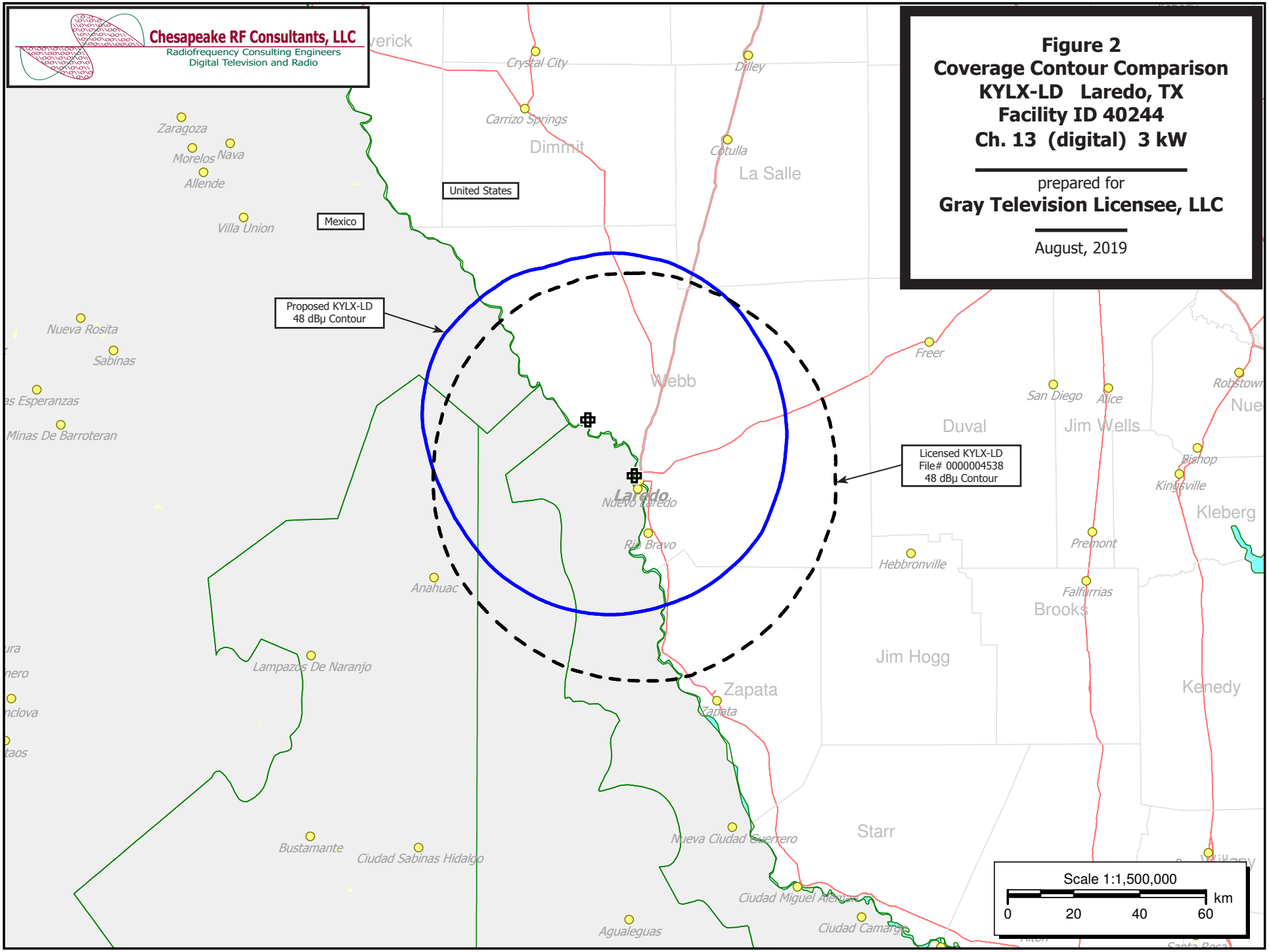

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio
Figure 2
Coverage Contour Comparison
KYLX-LD Laredo, TX
Facility ID 40244
Ch. 13 (digital) 3 kW
prepared for
Gray Television Licensee, LLC
August, 2019
Proposed KYLX-LD
48 dBµ Contour
Licensed KYLX-LD
File# 0000004538
48 dBµ Contour
United States
Mexico
Laredo
Nuevo Laredo
Webb
Duval
Jim Wells
Jim Hogg
Zapata
Starr
Brooks
Kenedy
Kleberg
La Salle
Dimmit
Zaragoza
Morelos
Nava
Allende
Villa Union
Nueva Rosita
Sabinas
Minas De Barroteran
Crystal City
Carrizo Springs
Dilley
Cotulla
Freer
San Diego
Alice
Robstown
Bishop
Kingsville
Rio Bravo
Hebbronville
Premont
Falfurrias
Anahuac
Lampazos De Naranjo
Bustamante
Ciudad Sabinas Hidalgo
Nueva Ciudad Guerrero
Ciudad Miguel Aleman
Ciudad Camargo
Agualeguas
Scale 1:1,500,000
km
0
20
40
60

Table 1 KYLX-LD TVStudy Analysis of Proposal

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

```
tvstudy v2.2.5 (4uoc83)
Database: localhost,  Study: KYLX-LD prop TLS-V4BB,  Model: Longley-Rice
Start: 2019.08.26 10:10:09

Study created: 2019.08.26 10:10:09

Study build station data: LMS TV 2019-08-20

    Proposal: KYLX-LD D13 LD APP LAREDO, TX
 File number: KYLX-LD prop TLS-V4BB
 Facility ID: 40244
Station data: User record
   Record ID: 2842
     Country: U.S.

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

Search options:
Non-U.S. records included
Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX   Call      Chan       Svc Status  City, State              File Number             Distance
No   KSPG-LP   N11        TX  LIC     CARRIZO SPRINGS, TX      BLTVL20001013ACD         93.2 km
No   KSAT-TV   D12        DT  APP     SAN ANTONIO, TX          BLANK0000035781         224.4
No   KSAT-TV   D12        DT  LIC     SAN ANTONIO, TX          BLCDT20121102ABH        224.4
No   KWDT-LP   N13+       TX  LIC     CORPUS CHRISTI, TX       BLTVL19950404IB         224.0
Yes  KRIS-TV   D13        DT  LIC     CORPUS CHRISTI, TX       BLCDT20060628ABC        203.0
No   KTRK-TV   D13        DT  LIC     HOUSTON, TX              BLCDT20090612AAS        458.5
No   KAKW-DT   D13        DT  LIC     KILLEEN, TX              BLCDT20120625ABA        376.2
No   KQVE-LD   D13        LD  LIC     SAN ANTONIO, TX          BLDVL20121004AAK        224.0
Yes  KRGV-TV   D13        DT  LIC     WESLACO, TX              BLCDT20020904AAR        251.5

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

    Channel: D13
       Mask: Full Service
   Latitude:  27 40 22.00 N (NAD83)
  Longitude:  99 39 52.00 W
Height AMSL: 434.5 m
       HAAT: 0.0 m
   Peak ERP: 3.00 kW
    Antenna: Die TLSV4-BB H 120.0 deg
Elev Pattrn: Generic
  Elec Tilt: 2.50

48.0 dBu contour:
Azimuth      ERP       HAAT   Distance
  0.0 deg  0.688 kW   264.6 m   49.5 km
 45.0       1.48      271.1     55.3
 90.0       2.71      271.9     59.7
135.0       2.92      304.5     62.1
180.0       1.93      289.3     58.3
225.0      0.835      264.4     50.9
270.0      0.629      282.9     50.0
315.0      0.631      269.3     49.2

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m   Computed HAAT: 277 m

Distance to Canadian border: 2179.4 km

**Proposal is within coordination distance of Mexican border
Distance to Mexican border: 1.5 km

Conditions at FCC monitoring station: Kingsville TX
Bearing: 97.9 degrees   Distance: 177.4 km
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Table 1 KYLX-LD TVStudy Analysis of Proposal

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 341.2 degrees Distance: 1474.5 km

Study cell size: 1.00 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%

Interference to BLCDT20060628ABC LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KRIS-TV	D13	DT	LIC	CORPUS CHRISTI, TX	BLCDT20060628ABC	
Undesireds:	KYLX-LD	D13	LD	APP	LAREDO, TX	KYLX-LD prop TLS-V4BB	203.0 km
	KSAT-TV	D12	DT	APP	SAN ANTONIO, TX	BLANK0000035781	181.6
	KTRK-TV	D13	DT	LIC	HOUSTON, TX	BLCDT20090612AAS	289.5
	KAKW-DT	D13	DT	LIC	KILLEEN, TX	BLCDT20120625ABA	333.9
	KRGV-TV	D13	DT	LIC	WESLACO, TX	BLCDT20020904AAR	183.9

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
29150.9	561,822	29024.6	561,684	24140.0	551,443	24134.0	551,439	0.02	0.00

Undesired	Total IX		Unique IX, before		Unique IX, after	
KYLX-LD D13 LD APP	56.8	62			6.0	4
KTRK-TV D13 DT LIC	340.6	256	45.8	41	45.8	41
KAKW-DT D13 DT LIC	144.9	442	7.9	6	7.9	6
KRGV-TV D13 DT LIC	4826.9	10,187	4462.5	9,726	4431.6	9,694

Interference to BLCDT20020904AAR LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KRGV-TV	D13	DT	LIC	WESLACO, TX	BLCDT20020904AAR	
Undesireds:	KYLX-LD	D13	LD	APP	LAREDO, TX	KYLX-LD prop TLS-V4BB	251.5 km
	KRIS-TV	D13	DT	LIC	CORPUS CHRISTI, TX	BLCDT20060628ABC	183.9

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
22062.1	1,246,620	21907.7	1,246,580	19049.9	1,245,526	19048.0	1,245,526	0.01	0.00
15087.6	1,308,893	14881.3	1,308,866	14794.5	1,308,433	14793.5	1,308,433	0.01	0.00
(in Mexico)									

Undesired	Total IX		Unique IX, before		Unique IX, after		
KYLX-LD D13 LD APP	61.1	24			2.0	0	
KYLX-LD D13 LD APP	17.8	6			1.0	0	(in Mexico)
KRIS-TV D13 DT LIC	2857.8	1,054	2857.8	1,054	2798.6	1,030	
KRIS-TV D13 DT LIC	86.8	433	86.8	433	70.1	427	(in Mexico)

Interference to proposal scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KYLX-LD	D13	LD	APP	LAREDO, TX	KYLX-LD prop TLS-V4BB	

Service area		Terrain-limited		IX-free		Percent IX		
5387.3	250,704	5373.4	250,704	5373.4	250,704	0.00	0.00	
3972.7	386,506	3956.6	386,506	3956.6	386,506	0.00	0.00	(in Mexico)

Channel and Facility Information

Section	Question	Response
Facility ID	40244	
State	Texas	
City	LAREDO	
LPD Channel	13	

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1045081
Coordinates (NAD83)	Latitude	27° 40' 22.0" N+
	Longitude	099° 39' 52.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	325.0 meters
	Support Structure Height	302.0 meters
	Ground Elevation (AMSL)	147.5 meters
Antenna Data	Height of Radiation Center Above Ground Level	287 meters
	Height of Radiation Center Above Mean Sea Level	434.5 meters
	Effective Radiated Power	3 kW

Antenna Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	No
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	DIE
	Model	TLS-V4BB/VP-R
	Rotation	120 degrees
	Electrical Beam Tilt	2.5
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
Elevation Radiation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	
	Out-of-Channel Emission Mask:	Full Service

Directional Antenna Relative Field Values (Pre-rotated Pattern)

Degree	Value	Degree	Value	Degree	Value	Degree	Value
0	1.000	**90**	0.606	**180**	0.462	**270**	0.606
10	0.995	**100**	0.549	**190**	0.459	**280**	0.669
20	0.978	**110**	0.506	**200**	0.458	**290**	0.736
30	0.951	**120**	0.479	**210**	0.458	**300**	0.803
40	0.910	**130**	0.460	**220**	0.453	**310**	0.860
50	0.860	**140**	0.453	**230**	0.460	**320**	0.910
60	0.803	**150**	0.458	**240**	0.479	**330**	0.951
70	0.736	**160**	0.458	**250**	0.506	**340**	0.978
80	0.669	**170**	0.459	**260**	0.549	**350**	0.995

Additional Azimuths

Degree	V_A