

ENGINEERING EXHIBIT

Special Temporary Authority for Digital Low Power Television Station

prepared for

Gray Television Licensee, LLC

K31PR-D Tyler, TX

Facility ID 182595

Ch. 31 1.4 kW Directional

Gray Television Licensee, LLC (“Gray”) is the licensee of digital Low Power Television station K31PR-D, Facility ID 182595, Channel 31, Tyler TX, (file# 0000153806). K31PR-D is presently silent, concurrent with the buildout of Gray’s K21PE-D (Facility ID 185722, Channel 21, Tyler TX file# 0000212512) which utilizes the same antenna location and height as the licensed K31PR-D and achieves the same coverage contour. A Construction Permit (“CP” file# 0000221046) authorizes K31PR-D to relocate to a different transmitting site. The equipment to construct the CP facility is currently not on hand. The STA sought herein by *Gray* seeks to operate K31PR-D with a reduced facility at an alternate site to resume operation prior to the 12-month anniversary of the date of going silent.

The proposed STA facility site is a rooftop location in downtown Tyler, TX associated with *Gray*’s KLTV studio building (Facility ID 68540, Tyler TX), located 22.2 km (13.8 miles) from the licensed site. The rooftop antenna structure does not require an FCC Antenna Structure Registration number since its overall height is less than 61 meters above ground and the structure passes the FCC’s “TOWAIR” slope test program.

The proposed antenna is a Kathrein directional model 750 10325 single panel having elliptical polarization (42.9 percent vertical polarization). The proposed horizontally polarized ERP is 1.4 kW and the vertically polarized ERP is 0.6 kW. Figure 1 supplies a plot of the antenna’s azimuthal pattern. As shown in Figure 2, the proposed STA facility’s 51 dBμ contour is encompassed by that of the K31PR-D licensed facility.

Interference study per OET Bulletin 69¹ shows that the proposal complies with the FCC's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. 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.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed operation 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 considering 25 percent antenna relative field in downward elevations (pattern data shows less than 25 percent relative field at angles 30 to 90 degrees below the antenna), the calculated signal density near the building at two meters above ground level attributable to the proposed facility is $13.2 \mu\text{W}/\text{cm}^2$, which is 3.4 percent of the general population/uncontrolled maximum permitted exposure limit. This is 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. Access to the rooftop is controlled and RF exposure warning signs will be posted. With respect to worker safety, the applicant will reduce power or cease operation as necessary to protect persons having access to the rooftop 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.

¹FCC 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 current "TVStudy" software with the default application processing template settings, 1 km cell size, and 0.2 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

Engineering Exhibit
Gray Television Licensee, LLC (K31PR-D)
(page 3 of 3)



List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	March 4, 2024
207 Old Dominion Road	Yorktown, VA 23692

703-650-9600

**Azimuth Pattern - Relative Field
(True North)**

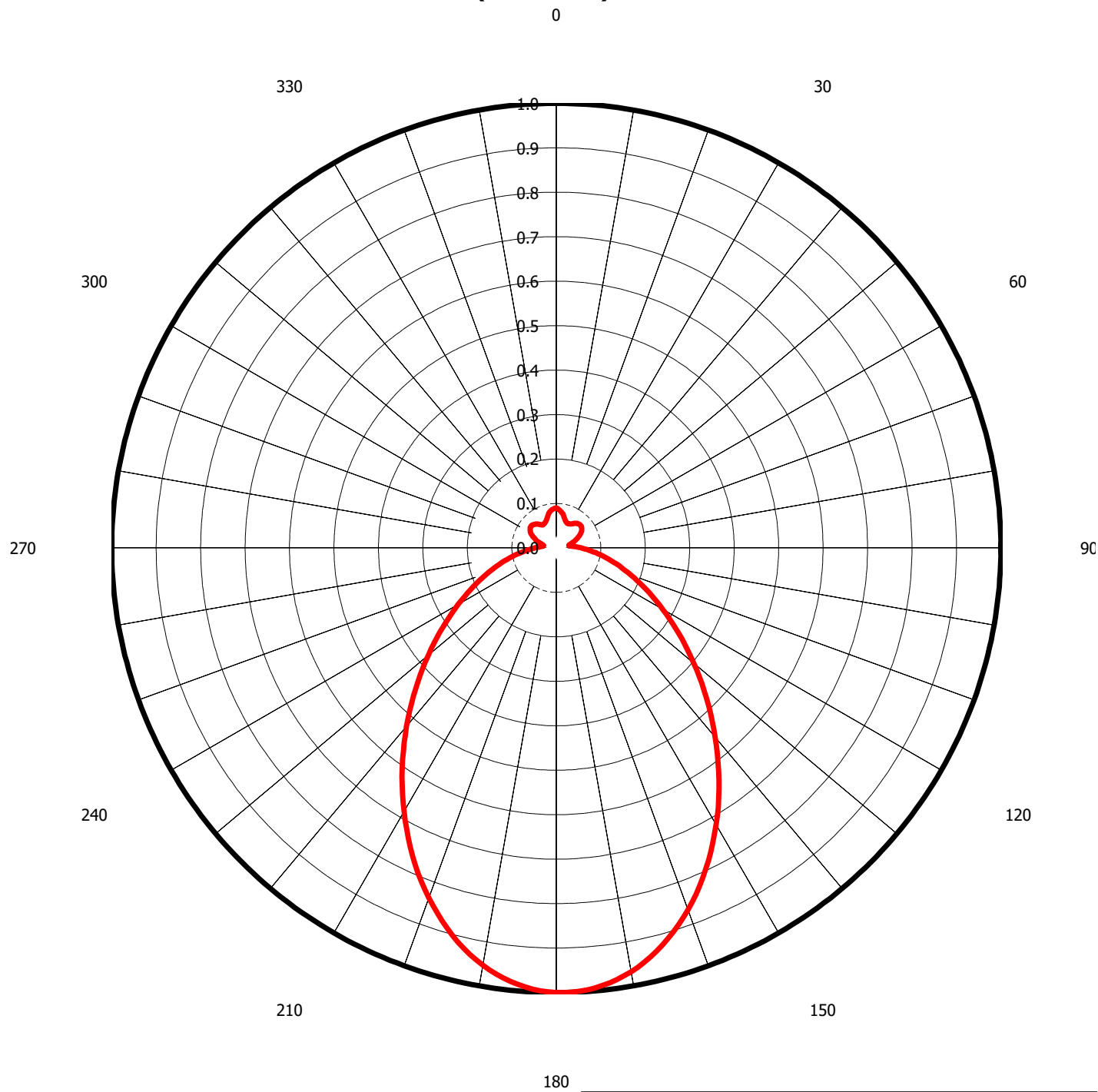


Figure 1
Antenna Azimuthal Pattern
K31PR-D Tyler, TX
Facility ID 182595
Ch. 31 1.4 kW Directional

prepared for
Gray Television Licensee, LLC

March, 2024



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

Figure 2
Coverage Contour Comparison
K31PR-D Tyler, TX
Facility ID 182595
Ch. 31 1.4 kW Directional

prepared for
Gray Television Licensee, LLC

March, 2024

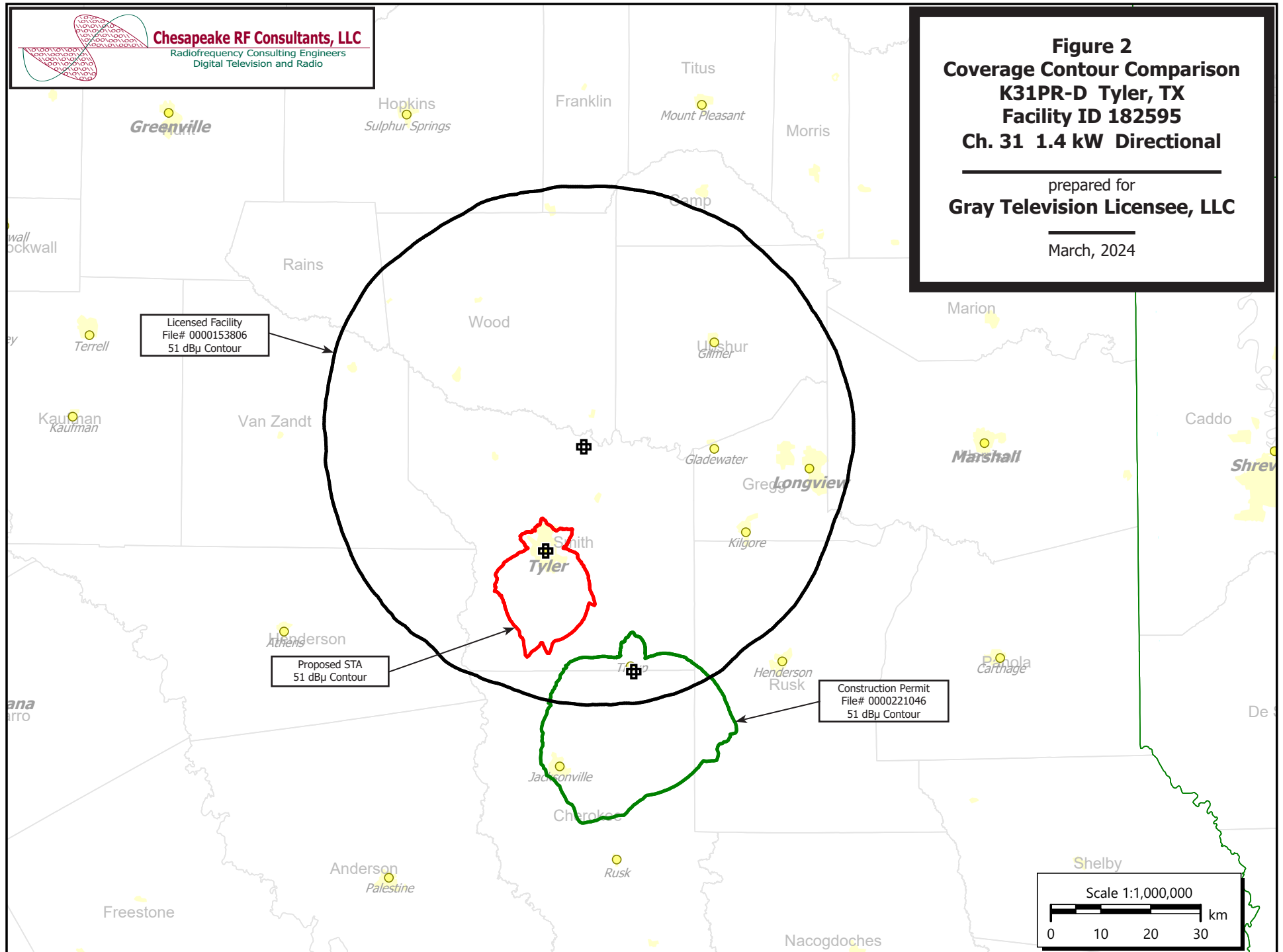


Table 1 K31PR-D TVStudy Analysis of Proposal (page 1 of 2)



tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: K31PR-D 65ft, Model: Longley-Rice
Start: 2024.03.04 08:26:00

Study created: 2024.03.04 08:26:00

Study build station data: LMS TV 2024-03-04

Proposal: K31PR-D D31 LD APP TYLER, TX
File number: K31PR-D 65ft
Facility ID: 182595
Station data: User record
Record ID: 294
Country: U.S.

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

Search options:
Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KVPO-LD	N30-	TX	LIC	SHREVEPORT, LA	BLTTL19950412IB	165.0 km
No	K30QB-D	D30	LD	LIC	SHREVEPORT, LA	BLANK0000068681	144.9
No	K30QR-D	D30	LD	LIC	BRYAN, TX	BLANK0000218839	215.0
No	K30QR-D	D30	LD	APP	BRYAN, TX	BLANK0000226645	215.6
No	KMPX	D30	DT	CP	DECATUR, TX	BLANK0000235452	159.4
No	KMPX	D30	DT	LIC	DECATUR, TX	BLCDT20060317AGE	158.6
No	KKPD-LD	D30	LD	LIC	TYLER, TX	BLANK0000188075	12.1
No	K31PZ-D	D31	LD	LIC	CLARKSVILLE, AR	BLANK0000194163	346.9
No	K31PZ-D	D31	LD	CP	CLARKSVILLE, AR	BLANK0000220385	363.3
No	DDKTEQ-LP	D31-	LD	APP	FULTON, AR	BLANK0000151968	197.2
No	KLAX-TV	D31	DT	LIC	ALEXANDRIA, LA	BLCDT20090622AGN	273.7
No	KAGN-CD	D31	DC	LIC	CROWLEY, LA	BLANK0000001651	357.6
No	DDK31HO-D	D31	LD	APP	SHREVEPORT, LA	BLDTL20120831AAD	132.8
No	KOET	D31	DT	LIC	EUFULA, OK	BLEDT20060601BJT	314.8
No	K31MK-D	D31	LD	LIC	LAWTON, OK	BLANK0000178492	374.5
No	KOHC-CD	D31	DC	LIC	OKLAHOMA CITY, OK	BLANK0000071619	389.0
No	KEOT-LD	D31	LD	CP	ABILENE, TX	BLANK0000177441	414.4
No	KBVO-CD	D31	DC	LIC	AUSTIN, TX	BLANK0000231625	327.1
No	KUBE-TV	D31	DT	LIC	BAYTOWN, TX	BLANK0000072353	309.7
No	KHXL-LD	D31-	LD	APP	HUNTSVILLE, TX	BLANK0000005630	223.8
No	KAZD	D31	DT	LIC	LAKE DALLAS, TX	BLANK0000125085	158.4
No	K31MU-D	D31	LD	LIC	LINGLEVILLE-CROWLEY, TX	BLDTL20150120AIJ	202.2
No	KPXJ	D32	DT	LIC	MINDEN, LA	BLANK0000192991	133.4
No	KDAF	D32	DT	CP	DALLAS, TX	BLANK0000127581	157.0
No	KDAF	D32	DT	LIC	DALLAS, TX	BLANK0000204411	157.0
No	KLNM-LD	D32	LD	LIC	LUFKIN, TX	BLANK0000187820	122.7
No	KLNM-LD	D32	LD	CP	LUFKIN, TX	BLANK0000238996	124.4

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D31
Mask: Simple
Latitude: 32 21 7.10 N (NAD83)
Longitude: 95 18 3.30 W
Height AMSL: 182.9 m
HAAT: 0.0 m
Peak ERP: 1.40 kW
Antenna: Kathrein-750 10325 1x (ID 1009080) 180.0 deg
Elev Pattn: Generic

50.4 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.011 kW	35.5 m	6.2 km
45.0	0.007	46.4	6.4
90.0	0.004	42.4	5.4

Table 1 K31PR-D TVStudy Analysis of Proposal
(page 2 of 2)



135.0	0.323	35.9	14.1
180.0	1.40	35.9	20.5
225.0	0.284	32.5	13.0
270.0	0.003	37.3	4.6
315.0	0.007	36.3	5.6

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 38 m

Distance to Canadian border: 1511.4 km

Distance to Mexican border: 627.7 km

Conditions at FCC monitoring station: Kingsville TX
Bearing: 205.2 degrees Distance: 599.8 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 317.0 degrees Distance: 1238.1 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 proposal scenario 1
3.26% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	K31PR-D	D31	LD	APP	TYLER, TX	K31PR-D 65ft	
Undesireds:	KKPD-LD	D30	LD	LIC	TYLER, TX	BLANK0000188075	12.1 km
	KAZD	D31	DT	LIC	LAKE DALLAS, TX	BLANK0000125085	158.4
Service area		Terrain-limited		IX-free		Percent IX	
356.1	124,222	353.0	124,215	313.8	120,163	11.12	3.26
Undesired		Total IX		Unique IX		Prcnt Unique IX	
KKPD-LD	D30 LD LIC	25.2	2,854	15.1	1,997	4.28	1.61
KAZD	D31 DT LIC	24.1	2,055	14.1	1,198	3.99	0.96