

ENGINEERING EXHIBIT

Request for Special Temporary Authorization prepared for

Estrella Television License of Houston LLC
KZJL Houston, TX
Facility ID 69531
Ch. 21 100 kW 489 m

Estrella Television License of Houston LLC (“*Estrella*”), licensee of KZJL (Ch. 21, Facility ID 69531, Houston TX), requests Special Temporary Authority (“STA”) to operate with an emergency antenna. KZJL is licensed to operate with 880 kW effective radiated power (“ERP”) directional and an antenna height above average terrain (“HAAT”) of 595 meters (file# 0000072328). KZJL’s main antenna has failed and is inoperative.

KZJL utilizes a broadband top-mounted directional antenna that is shared with licensed stations KYAZ (Ch. 25 Katy TX) and KTBU (Ch. 33 Conroe TX). The subject UHF broadband antenna and the supporting tower structure are owned by American Tower Corporation (“ATC”). *Estrella* has been advised by ATC that the failure of the top-mount broadband antenna will require removal of the antenna from the tower and shipment to the manufacturer for repair.

At the same tower location ATC also owns a side-mounted UHF broadband directional antenna that was previously utilized as an interim antenna for certain television stations that were reassigned to new channels in the incentive auction. After failure of the main antenna, KZJL resumed operation using the side-mounted broadband antenna as an emergency antenna pursuant to §73.1680. The emergency antenna is currently in use by KJZL in order to maintain program service to the public until the main antenna is repaired or replaced.

The emergency antenna is side-mounted on the tower structure associated with FCC Antenna Structure Registration number 1059622, the same tower as the main KZJL antenna. The emergency antenna is a horizontally-polarized directional Dielectric model TFU-24WB-R C160

and the center of radiation is 486.2 meters above ground level. The directional antenna's azimuthal and elevation patterns are depicted in Figures 1 and 2, respectively.

Estrella proposes to operate the emergency antenna at 100 kW ERP at 489 meters HAAT. The emergency facility provides 48 dB μ principal community contour coverage over Houston as depicted in Figure 3.

Customarily the service contour of an emergency or auxiliary antenna may not extend beyond that of the licensed main facility. For the case at hand, a *de minimis* extension of the 41 dB μ noise limited service contour ("NLSC") will exist for the emergency antenna operation at 100 kW ERP as depicted on Figure 3.

The contour extension arises because the main antenna's directional pattern has a deep minima opposite the main lobe. Like the main antenna, the emergency antenna's directional pattern is that of a wide cardioid and is oriented in the same azimuth (northeast at 40°T) as the main antenna. However, the emergency antenna's directional pattern has greater radiation on the back side of the pattern, to the southwest. The azimuthal patterns for both antennas are provided on plots inset to Figure 3.

The NLSC of the emergency facility is encompassed by that of the licensed main facility except for a small area to the southwest, as depicted in Figure 3. The NLSC extension area contains 27,173 persons, which is 0.45 percent of the total population (6,025,226 persons) within the main KZJL facility's NLSC.

No impermissible interference would be created by the 100 kW emergency antenna facility. Interference study per FCC OET Bulletin 69¹ shows that the emergency facility complies with the

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, 2 km cell size, and 1 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.

0.5 percent limit of new interference caused to pertinent nearby full service and Class A television stations as required by §73.616. The interference study output report is provided as Table 1.

The TVStudy analysis in Table 1 shows that proposed 100 kW ERP emergency facility would be subject to 0.79 percent incoming interference from other stations and achieve an interference-free service population of 5,872,782 persons. This is a 97.6 percent match of the licensed facility's interference-free service population of 6,014,821 persons.

To eliminate the NLSC extension, the auxiliary antenna's ERP would have to be reduced to 4 kW, a 14 dB reduction that would result in considerable loss of service for the emergency operation. At 4 kW ERP, TVStudy analysis shows that the emergency facility would suffer from 79.4 percent incoming interference and achieve an interference-free service population of 1,127,664 persons. This would be only an 18.7 percent match of the licensed facility's interference-free service population.

For the reasons stated above, the minor NLSC extension is necessary for the emergency antenna to provide a reasonable level of service to the public.

Regarding RF exposure, calculations per FCC OET Bulletin Number 65 (considering 20 percent antenna relative field in downward elevations) show that the signal density near the tower at two meters above ground level attributable to the proposed facility is $0.6 \mu\text{W}/\text{cm}^2$, which is 0.2 percent of the general population/uncontrolled maximum permitted 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 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.

Engineering Exhibit
Estrella Television License of Houston LLC (KZJL)
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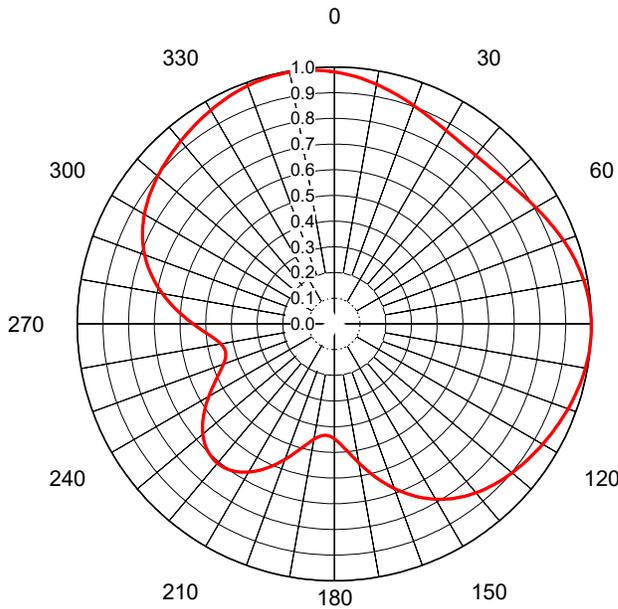


List of Attachments

- Figure 1 STA Antenna Azimuthal Pattern
- Figure 2 STA Antenna Elevation Pattern
- Figure 3 Proposed STA Coverage Contours
- Table 1 TVStudy Analysis of Proposal

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E. May 26, 2022
207 Old Dominion Road Yorktown, VA 23692 703-650-9600



AZIMUTH PATTERN Horizontal Polarization

Proposal No. **20220526jmd**
 Date **26-May-22**
 Call Letters **KJZL**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-24WB-R C160**
 Gain **1.51 (1.79dB)**
 Calculated

Pattern Number **WB-C160-21 Hpol**

Deg	Value																		
0	0.981	36	0.858	72	0.957	108	0.973	144	0.834	180	0.447	216	0.701	252	0.447	288	0.767	324	0.942
1	0.979	37	0.857	73	0.961	109	0.970	145	0.827	181	0.442	217	0.704	253	0.442	289	0.776	325	0.945
2	0.976	38	0.857	74	0.965	110	0.967	146	0.820	182	0.438	218	0.706	254	0.439	290	0.785	326	0.948
3	0.973	39	0.856	75	0.969	111	0.964	147	0.813	183	0.436	219	0.707	255	0.437	291	0.793	327	0.952
4	0.970	40	0.856	76	0.972	112	0.961	148	0.805	184	0.435	220	0.708	256	0.437	292	0.801	328	0.955
5	0.966	41	0.856	77	0.976	113	0.958	149	0.797	185	0.435	221	0.707	257	0.438	293	0.809	329	0.958
6	0.963	42	0.857	78	0.979	114	0.955	150	0.788	186	0.437	222	0.706	258	0.440	294	0.816	330	0.961
7	0.959	43	0.857	79	0.982	115	0.952	151	0.779	187	0.440	223	0.704	259	0.444	295	0.823	331	0.964
8	0.955	44	0.858	80	0.985	116	0.949	152	0.770	188	0.444	224	0.701	260	0.448	296	0.830	332	0.967
9	0.951	45	0.860	81	0.987	117	0.946	153	0.760	189	0.450	225	0.698	261	0.455	297	0.836	333	0.970
10	0.947	46	0.861	82	0.989	118	0.943	154	0.750	190	0.456	226	0.693	262	0.462	298	0.842	334	0.972
11	0.943	47	0.863	83	0.992	119	0.939	155	0.739	191	0.464	227	0.688	263	0.470	299	0.848	335	0.975
12	0.939	48	0.865	84	0.993	120	0.936	156	0.728	192	0.473	228	0.682	264	0.479	300	0.853	336	0.977
13	0.934	49	0.867	85	0.995	121	0.933	157	0.717	193	0.482	229	0.675	265	0.490	301	0.858	337	0.980
14	0.930	50	0.870	86	0.997	122	0.930	158	0.706	194	0.492	230	0.667	266	0.500	302	0.863	338	0.982
15	0.926	51	0.873	87	0.998	123	0.926	159	0.694	195	0.503	231	0.659	267	0.512	303	0.868	339	0.984
16	0.921	52	0.876	88	0.999	124	0.923	160	0.681	196	0.514	232	0.651	268	0.524	304	0.872	340	0.986
17	0.917	53	0.879	89	0.999	125	0.920	161	0.669	197	0.526	233	0.641	269	0.536	305	0.877	341	0.988
18	0.913	54	0.882	90	1.000	126	0.916	162	0.656	198	0.538	234	0.631	270	0.549	306	0.881	342	0.990
19	0.909	55	0.886	91	1.000	127	0.913	163	0.643	199	0.549	235	0.621	271	0.562	307	0.885	343	0.991
20	0.904	56	0.889	92	1.000	128	0.909	164	0.630	200	0.561	236	0.610	272	0.575	308	0.889	344	0.992
21	0.900	57	0.893	93	1.000	129	0.906	165	0.616	201	0.573	237	0.599	273	0.589	309	0.892	345	0.993
22	0.896	58	0.897	94	0.999	130	0.902	166	0.603	202	0.585	238	0.588	274	0.602	310	0.896	346	0.994
23	0.892	59	0.901	95	0.999	131	0.898	167	0.590	203	0.597	239	0.576	275	0.615	311	0.899	347	0.995
24	0.889	60	0.905	96	0.998	132	0.895	168	0.576	204	0.608	240	0.564	276	0.628	312	0.903	348	0.995
25	0.885	61	0.910	97	0.996	133	0.891	169	0.563	205	0.619	241	0.552	277	0.642	313	0.906	349	0.995
26	0.881	62	0.914	98	0.995	134	0.887	170	0.550	206	0.629	242	0.540	278	0.654	314	0.910	350	0.995
27	0.878	63	0.918	99	0.994	135	0.882	171	0.537	207	0.639	243	0.529	279	0.667	315	0.913	351	0.995
28	0.875	64	0.923	100	0.992	136	0.878	172	0.524	208	0.649	244	0.517	280	0.679	316	0.916	352	0.994
29	0.872	65	0.927	101	0.990	137	0.873	173	0.512	209	0.658	245	0.506	281	0.692	317	0.920	353	0.993
30	0.869	66	0.932	102	0.988	138	0.868	174	0.500	210	0.666	246	0.495	282	0.703	318	0.923	354	0.992
31	0.867	67	0.936	103	0.986	139	0.863	175	0.489	211	0.674	247	0.485	283	0.715	319	0.926	355	0.991
32	0.865	68	0.941	104	0.984	140	0.858	176	0.479	212	0.680	248	0.476	284	0.726	320	0.929	356	0.990
33	0.863	69	0.945	105	0.981	141	0.852	177	0.469	213	0.687	249	0.467	285	0.737	321	0.932	357	0.988
34	0.861	70	0.949	106	0.979	142	0.847	178	0.461	214	0.692	250	0.459	286	0.747	322	0.936	358	0.986
35	0.860	71	0.953	107	0.976	143	0.841	179	0.454	215	0.697	251	0.452	287	0.757	323	0.939	359	0.984



Figure 1
Antenna Azimuthal Pattern
KJZL Houston, TX
Facility ID 69531
Ch. 21 100 kW 489 m

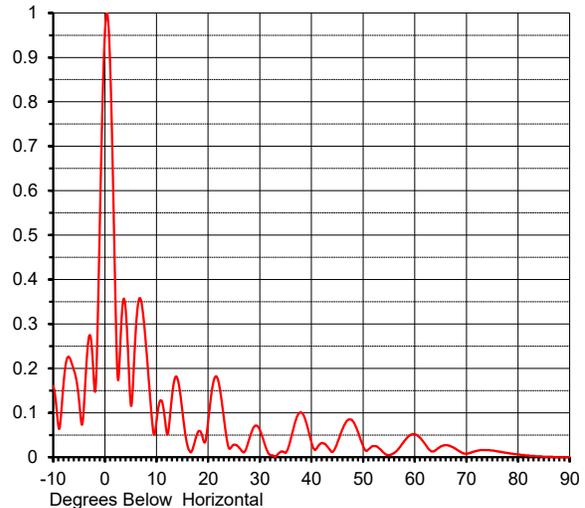
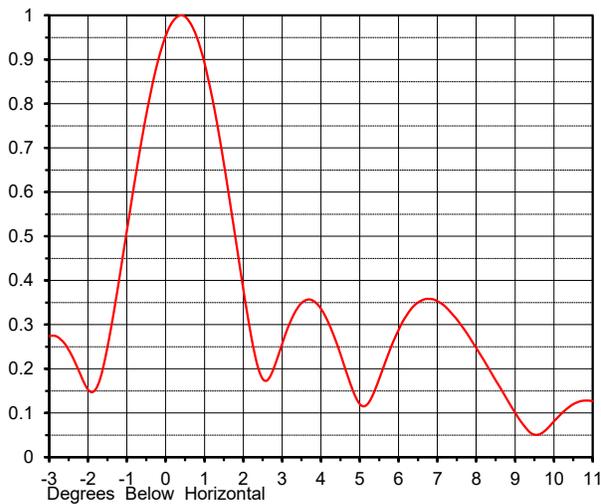
prepared for
Estrella Television License
of Houston LLC

May, 2022

ELEVATION PATTERN

Proposal No. **20220526jmd**
 Date **26-May-22**
 Call Letters **KJZL**
 Channel **21**
 Frequency **515 MHz**
 Antenna Type **TFU-24WB-R C160**

RMS Directivity at Main Lobe **21.3 (13.27 dB)**
 RMS Directivity at Horizontal **19.3 (12.86 dB)**
 Beam Tilt **0.50 deg**
 Pattern Number **24W213050-21**
Calculated



Angle	Field								
-10.0	0.160	10.0	0.081	30.0	0.062	50.0	0.025	70.0	0.008
-9.0	0.070	11.0	0.127	31.0	0.028	51.0	0.017	71.0	0.011
-8.0	0.165	12.0	0.054	32.0	0.005	52.0	0.025	72.0	0.014
-7.0	0.226	13.0	0.137	33.0	0.000	53.0	0.021	73.0	0.016
-6.0	0.196	14.0	0.179	34.0	0.012	54.0	0.010	74.0	0.016
-5.0	0.128	15.0	0.105	35.0	0.010	55.0	0.005	75.0	0.015
-4.0	0.125	16.0	0.026	36.0	0.041	56.0	0.009	76.0	0.013
-3.0	0.274	17.0	0.018	37.0	0.084	57.0	0.021	77.0	0.011
-2.0	0.153	18.0	0.056	38.0	0.101	58.0	0.037	78.0	0.009
-1.0	0.512	19.0	0.041	39.0	0.078	59.0	0.049	79.0	0.008
0.0	0.953	20.0	0.080	40.0	0.034	60.0	0.052	80.0	0.006
1.0	0.892	21.0	0.168	41.0	0.020	61.0	0.044	81.0	0.005
2.0	0.380	22.0	0.170	42.0	0.032	62.0	0.030	82.0	0.004
3.0	0.256	23.0	0.092	43.0	0.025	63.0	0.015	83.0	0.003
4.0	0.336	24.0	0.021	44.0	0.012	64.0	0.015	84.0	0.002
5.0	0.120	25.0	0.028	45.0	0.032	65.0	0.024	85.0	0.001
6.0	0.288	26.0	0.021	46.0	0.063	66.0	0.027	86.0	0.001
7.0	0.353	27.0	0.011	47.0	0.083	67.0	0.024	87.0	0.000
8.0	0.247	28.0	0.042	48.0	0.081	68.0	0.018	88.0	0.000
9.0	0.101	29.0	0.070	49.0	0.057	69.0	0.011	89.0	0.000
						90.0	0.000		

Figure 2
Antenna Elevation Pattern
KJZL Houston, TX
Facility ID 69531
Ch. 21 100 kW 489 m

prepared for
Estrella Television License
of Houston LLC

May, 2022



Table 1 KJZL TVStudy Analysis of Proposal
 (page 1 of 3)



tvstudy v2.2.5 (4uoc83)
 Database: localhost, Study: KJZL TFU-WB 100kW__, Model: Longley-Rice
 Start: 2022.05.26 13:46:22

Study created: 2022.05.26 13:46:22

Study build station data: LMS TV 2022-05-25

Proposal: KJZL D21 DT APP HOUSTON, TX
 File number: KJZL TFU-WB 100kW
 Facility ID: 69531
 Station data: User record
 Record ID: 3164
 Country: U.S.
 Zone: III

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	KLTL-TV	D20	DT	LIC	LAKE CHARLES, LA	BLEDT20100216ABR	258.7 km
Yes	KUVM-CD	D20	DC	LIC	MISSOURI CITY, TX	BLANK0000071589	0.0
No	KAVU-TV	D20	DT	LIC	VICTORIA, TX	BLANK0000112500	175.9
No	WBRL-CD	D21	DC	LIC	BATON ROUGE, LA	BLDTA20100908AAP	416.4
Yes	KXAN-TV	D21	DT	LIC	AUSTIN, TX	BLANK0000121393	236.3
Yes	KXAN-TV	D21	DT	CP	AUSTIN, TX	BLANK0000127602	236.3
No	KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	364.0
No	KLUJ-TV	D21	DT	LIC	HARLINGEN, TX	BLANK0000120393	433.6
No	KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	236.5
Yes	KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000169199	1.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D21
 Latitude: 29 33 45.20 N (NAD83)
 Longitude: 95 30 35.90 W
 Height AMSL: 508.8 m
 HAAT: 489.3 m
 Peak ERP: 100 kW
 Antenna: DIE TFU-WB-C160 Ch-21 40.0 deg
 Elev Pattn: Generic
 Elec Tilt: 0.50

39.5 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	96.2 kW	488.9 m	94.8 km
45.0	74.5	491.2	92.9
90.0	100	490.2	95.2
135.0	77.4	489.9	93.2
180.0	20.0	491.0	83.3
225.0	47.3	489.9	89.4
270.0	30.1	488.7	86.1
315.0	83.3	484.6	93.3

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

No land mobile station failures found

Table 1 KJZL TVStudy Analysis of Proposal
(page 2 of 3)



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%

Interference to BLANK0000071589 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance	
Desired: KUVM-CD	D20	DC	LIC	MISSOURI CITY, TX	BLANK0000071589		
Undesireds: KZJL	D21	DT	BL	HOUSTON, TX	DTVBL69531	0.0 km	
KZJL	D21	DT	APP	HOUSTON, TX	KZJL TFU-WB 100kW	0.0	
KTXH	D19	DT	LIC	HOUSTON, TX	BLANK0000166189	0.0	
Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX
5809.1 4,646,177	5809.1	4,646,177	4997.5	4,490,711	5209.5	4,511,823	-4.24 -0.47
Undesired	Total IX		Unique IX, before		Unique IX, after		
KZJL D21 DT BL	791.6	144,031	212.1	21,112			
KZJL D21 DT APP	195.6	46,233			0.0	0	
KTXH D19 DT LIC	599.5	134,354	20.0	11,435	404.0	88,121	

Interference to BLANK0000121393 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance	
Desired: KXAN-TV	D21	DT	LIC	AUSTIN, TX	BLANK0000121393		
Undesireds: KZJL	D21	DT	BL	HOUSTON, TX	DTVBL69531	236.3 km	
KZJL	D21	DT	APP	HOUSTON, TX	KZJL TFU-WB 100kW	236.3	
KAVU-TV	D20	DT	LIC	VICTORIA, TX	BLANK0000112500	177.0	
KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	263.6	
KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	0.6	
Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX
34843.9 2,678,666	34103.5	2,624,648	33187.7	2,588,354	33568.0	2,598,771	-1.15 -0.40
Undesired	Total IX		Unique IX, before		Unique IX, after		
KZJL D21 DT BL	608.7	16,205	556.8	15,163			
KZJL D21 DT APP	188.5	5,361			176.5	4,746	
KAVU-TV D20 DT LIC	4.0	9	4.0	9	4.0	9	
KDTX-TV D21 DT LIC	306.8	20,307	251.0	18,876	290.8	19,303	
KLRU D22 DT LIC	52.2	1,204	48.2	815	48.2	815	

Interference to BLANK0000127602 CP scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance	
Desired: KXAN-TV	D21	DT	CP	AUSTIN, TX	BLANK0000127602		
Undesireds: KZJL	D21	DT	BL	HOUSTON, TX	DTVBL69531	236.3 km	
KZJL	D21	DT	APP	HOUSTON, TX	KZJL TFU-WB 100kW	236.3	
KAVU-TV	D20	DT	LIC	VICTORIA, TX	BLANK0000112500	177.0	
KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	263.6	
KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	0.6	
Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX
37301.0 2,844,770	36349.1	2,747,877	35172.8	2,700,905	35649.4	2,724,392	-1.36 -0.87
Undesired	Total IX		Unique IX, before		Unique IX, after		
KZJL D21 DT BL	857.3	29,390	781.5	28,952			
KZJL D21 DT APP	340.8	5,584			304.8	5,465	
KAVU-TV D20 DT LIC	27.9	114	20.0	73	20.0	73	
KDTX-TV D21 DT LIC	330.7	17,194	258.9	16,408	298.7	16,727	
KLRU D22 DT LIC	40.2	1,101	36.2	712	36.2	712	

Interference to BLANK0000169199 LIC scenario 1

Table 1 KJZL TVStudy Analysis of Proposal
 (page 3 of 3)



Call	Chan	Svc	Status	City, State	File Number	Distance
Desired: KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000169199	
Undesireds: KZJL	D21	DT	BL	HOUSTON, TX	DTVBL69531	1.0 km
KZJL	D21	DT	APP	HOUSTON, TX	KZJL TFU-WB 100kW	1.0
KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	236.1
KETK-TV	D22	DT	LIC	JACKSONVILLE, TX	BMLCDT20120516ABW	277.4
Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX		
43481.3 6,095,741	43429.2 6,095,606	42174.9 6,079,584	42174.9 6,079,584	0.00 0.00		
Undesired	Total IX	Unique IX, before	Unique IX, after			
KZJL D21 DT BL	4.0	48	0.0	0		
KZJL D21 DT APP	0.0	0	0.0	0		
KLRU D22 DT LIC	842.2	10,490	557.8	8,272	561.8	8,320
KETK-TV D22 DT LIC	692.5	7,702	412.2	5,532	412.2	5,532

Interference to proposal scenario 1
 0.79% interference received

Call	Chan	Svc	Status	City, State	File Number	Distance
Desired: KZJL	D21	DT	APP	HOUSTON, TX	KZJL TFU-WB 100kW	
Undesireds: KXAN-TV	D21	DT	LIC	AUSTIN, TX	BLANK0000121393	236.3 km
KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	364.0
KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000169199	1.0
Service area	Terrain-limited	IX-free	Percent IX			
26171.7 5,919,659	26171.7 5,919,659	24097.3 5,872,782	7.93 0.79			
Undesired	Total IX	Unique IX	Prcnt Unique IX			
KXAN-TV D21 DT LIC	188.7	4,779	0.52 0.08	136.5	4,465	
KDTX-TV D21 DT LIC	4.0	0	0.00 0.00	0.0	0	
KTMD D22 DT LIC	1938.0	42,412	7.21 0.71	1885.7	42,098	

Interference to proposal scenario 2
 0.81% interference received

Call	Chan	Svc	Status	City, State	File Number	Distance
Desired: KZJL	D21	DT	APP	HOUSTON, TX	KZJL TFU-WB 100kW	
Undesireds: KXAN-TV	D21	DT	CP	AUSTIN, TX	BLANK0000127602	236.3 km
KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	364.0
KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000169199	1.0
Service area	Terrain-limited	IX-free	Percent IX			
26171.7 5,919,659	26171.7 5,919,659	24073.2 5,871,973	8.02 0.81			
Undesired	Total IX	Unique IX	Prcnt Unique IX			
KXAN-TV D21 DT CP	228.9	5,961	0.61 0.09	160.6	5,274	
KDTX-TV D21 DT LIC	4.0	0	0.00 0.00	0.0	0	
KTMD D22 DT LIC	1938.0	42,412	7.14 0.70	1869.7	41,725	