

Comprehensive Engineering Exhibit

Minor Change of K221GV

Facility ID 202298

This application requests for K221GV a change in antenna polarity from horizontal to vertical only. No change in channel, location, power or height is requested.

Antenna Location

This proposal is to simply operate the proposed antenna facility in vertical instead of horizontal polarity. This change will allow for a simpler installation of the antenna between the “folded unipole” wires of co-located AM station KKGM, which is the primary station for this fill-in translator. Below as **Figure 1** is an overlap and spacing study, from which it can be determined that this proposal is within the licensed and proposed contour of **second** adjacent channel station KZPS as well as **second** adjacent station KKXT.

73.1204 Compliance

We will demonstrate that a lack of population and/or other factors allow this proposal to be compliant with 74.1204. The process commonly called “Living Way”, allows for the use of D/U Analysis, also known as “signal strength ratio methodology” to be utilized to demonstrate compliance. In this instant case the facility to be protected is on a second or third adjacent channel and is to be afforded protection from signals 40 dB stronger than the protected facility presents near the proposed translator antenna location.

Concerning KKXT Licensed Facility; In **Figure 2** a map showing the predicted 80.3 dBu signal contour of the protected KKXT facility at 500 meters beyond the proposed translator antenna location is given. This proposal can only cause predicted interference to the protected facility by having a signal exceeding 120.3 dBu (80.3. + 40) in a habitable/populated area. Utilizing the line of sight equation shown in **Figure 3** it has been determined that a 120.3 dBu signal developed by 0.5 watts, as proposed, emitted by the proposed antenna will not reach a habitable area. With examination of the image in **Figure 4** it can be determined that no habitable space extends into the confines of this contour.

Concerning KZPS; In **Figure 2** a map showing the predicted 86.6 dBu signal contour of the protected KZPS facility at the proposed translator antenna location is given. This is a stronger signal than KKXT, thus by protecting KKXT, KZPS is inherently protected.

Fill-In and Minor Change Status This proposal is to serve as a fill-in translator for station KFFF, Facility ID 163 Bennington, NE. The map of **Figure 5** demonstrates that the proposed 60 dBu contour is contained within that of the 25 mile radius of that facility.

RF Fields Statement

The proposed facilities were evaluated in terms of potential radio frequency field exposure at ground level in accordance with OET Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio frequency Radiation."

This proposal K221GV is to operate with 0.5 watts, antenna system is a Scala, CL-FM, a one (1) element antenna, mounted 10 meters above ground. FM Model RF Fields program has been set to calculate values for an "Opposed V Dipole" elements operated with an effective radiated power of 0.5 watts. At 2 meters above the surface, at 1.8 meters from the base of the tower, this proposal will contribute worst case, 0.3 microwatts per square centimeter, or 0.03 percent of the allowable ANSI limit for controlled exposure, and 0.15 percent of the allowable limit for uncontrolled exposure. It is therefore believed that this proposal is in compliance with OET Bulletin Number 65 as required by the Federal Communications Commission.

Further, the applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The site itself is restricted from public access. The applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

Figure 1. Overlap and Spacing Study

iHeartMedia Troy Langham K221GV Prp as V Pol												
REFERENCE 32 48 36.50 N. 97 07 25.00 W.		CH#	221D	- 92.1 MHz, Pwr= 0.001 kW DA, HAAT= 0.0 M, COR= 179 M	Average Protected F(50-50)= 1.82 km Standard Directional		DISPLAY DATES DATA 04-10-23 SEARCH 04-13-23					
CH CITY	CALL	TYPE STATE	ANT TX	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap	*OUT* in km)	
223C	KZPS	LIC_CN	TX	149.4	28.58	32 35 19.50	100.000	12.9	88.7	14.0	-60.2*	
	Dallas	TX		329.5	BMLH20060907AAO	96 58 06.00	508	698	Ihm Licenses, LLC			
221C1	KTFW-FM	LIC_NCN	TX	235.1	103.15	32 16 31.50	25.000	159.6	69.8	-57.5*	31.7	
	Glen Rose	TX		54.6	BLH19990429KCC	98 01 23.10	432	757	Lkcm Radio Licenses, L.P.			
219C0	KKXT	LIC_CN	TX	149.2	29.25	32 35 02.50	19.500	7.7	74.8	19.8	-45.6*	
	Dallas	TX		329.3	BLED20140903AFT	96 57 49.00	572	764	North Texas Public Broadca			
221D	K221GV	CP_DHN	TX	0.0	0.00	32 48 36.50	0.001		---			
	Fort Worth	TX		257.6	BNPFT20180423ABH	97 07 25.00		179	Ihm Licenses, LLC			
221L1	KPVC-LP	LIC_CN	TX	84.6	20.40	32 49 37.50	0.100			-0.8	8.8	
	Dallas	TX		264.8	BLL20160428AAV	96 54 22.00	30	180	Iglesia Evangelica Vida Y			
221A	KXEZ	LIC_CN	TX	53.4	87.34	33 16 33.40	1.650	84.3	29.9	1.5	54.4	
	Farmersville	TX		233.8	BLH20140915ACP	96 22 07.90	193	379	Metro Broadcasters - Texas			
221L1	KODE-LP	LIC_CN	TX	1.6	39.69	33 10 01.40	0.015			21.0	32.6	
	Denton	TX		181.6	BLL20160222AAK	97 06 43.00	77	262	Mision Templo Bethel, Inc.			
221D	K221FI	LIC_CN	TX	157.5	64.18	32 16 35.20	0.150	20.8	6.2	41.8	53.2	
	Mexia	TX		337.6	0000135321	96 51 44.50		200	Templo De Dios, Inc. 1			
221C1	KFXI	LIC_CN	OK	338.6	223.77	34 40 50.30	100.000	157.6	60.6	65.7	161.5	
	Marlow	OK		158.1	BLH20080731AIK	98 01 03.10	166	537	Dfwu, Inc.			
222D	K222DD	LIC_CN	TX	0.9	90.99	33 37 42.40	0.250	18.5	12.5	71.5	78.1	
	Gainesville	TX		180.9	0000202906	97 06 28.00		304	First IV Media, Inc			
221C3	KRMW	LIC_NCN	TX	105.1	180.26	32 22 30.70	9.800	99.9	36.1	78.3	137.0	
	Tyler	TX		286.1	BLH20160330AQV	95 16 11.00	130	274	Atw Media, LLC			
220C3	KPMA-FM	LIC_NCN	TX	300.0	142.71	33 26 38.40	25.000	54.2	33.7	88.3	108.0	
	Archer City	TX		119.2	BLED20110509ADS	98 27 23.20	55	381	Templo De Dios, Inc. 1			
222D	K222AW	LIC_CN	TX	320.7	107.07	33 33 10.40	0.190	17.2	11.8	89.7	94.6	
	Bowie	TX		140.3	BLFT20150309AGU	97 51 22.10		401	Educational Media Foundati			
220A	KPFC	LIC_DCN	TX	6.0	96.11	33 40 11.30	0.300	4.8	3.4	90.2	91.6	
	Callisburg	TX		186.1	BLED19980427KA	97 00 51.00	20	258	Southwestern Diabetic Foun			
218A	KYFB	LIC_CN	TX	27.3	111.87	33 42 10.40	4.500	1.9	18.3	108.5	92.3	
	Denison	TX		207.6	BLED20070220ABF	96 34 06.00	67	276	Bible Broadcasting Network			
218D	K218EB	LIC_CN	TX	69.7	101.93	33 07 24.40	0.250	1.1	8.5	99.1	93.1	
	Greenville	TX		250.3	BLFT20150702ABF	96 05 47.90		208	Bible Broadcasting Network			
220A	KSSU	LIC_DCN	OK	25.2	150.90	34 02 12.30	3.200	35.1	23.3	114.4	126.3	
	Durant	OK		205.5	BLED20130821ADB	96 25 38.00	106	314	Southeastern Oklahoma Stat			
224A	KTRX	LIC_CN	OK	4.4	145.58	34 06 56.40	5.500	2.9	29.9	141.6	115.1	
	Dickson	OK		184.5	BMLH20061207AAS	97 00 07.00	104	348	Smg-Ardmore, LLC			
220A	KZRF-FM	CP_DCN	TX	74.6	146.74	33 09 05.50	6.000	26.8	18.1	118.4	125.5	
	Sulphur Springs	TX		255.4	0000143980	95 36 13.40	45	191	Templo De Dios Inc 1			
218A	KYFA-FM	LIC_CN	TX	86.8	128.34	32 52 03.40	0.200	1.0	7.9	125.4	120.1	
	Ginger	TX		267.5	BLED20101217ABL	95 45 04.80	48	180	Central Park Church Of God			
220A	KZRF-FM	LIC_CN	TX	74.6	146.73	33 09 05.40	0.750	14.6	10.6	130.3	133.5	
	Sulphur Springs	TX		255.4	BLED20110316AAB	95 36 13.80	45	190	Templo De Dios Inc 1			
224C2	KISY	LIC_NCN	TX	57.5	175.21	33 38 46.40	29.000	4.3	41.1	169.3	134.1	
	Blossom	TX		238.4	BLH20140808ABC	95 31 35.80	107	262				
222C2	AU9342840	VAC_UN	TX	293.5	219.89	33 34 49.33	50.000	78.2	52.3	141.5	167.1	
	Seymour	TX		112.3	RM9778	99 18 02.28	150	553	From CDBS			

Terrain database is USGS 03 SEC , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
In & out distances between contours are shown at closest points. Reference zone= - Zone 2, Co to 3rd adjacent.
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"a"affixed to 'IN' or 'OUT' values = site inside restricted contour.

Figure 2. Contour Map

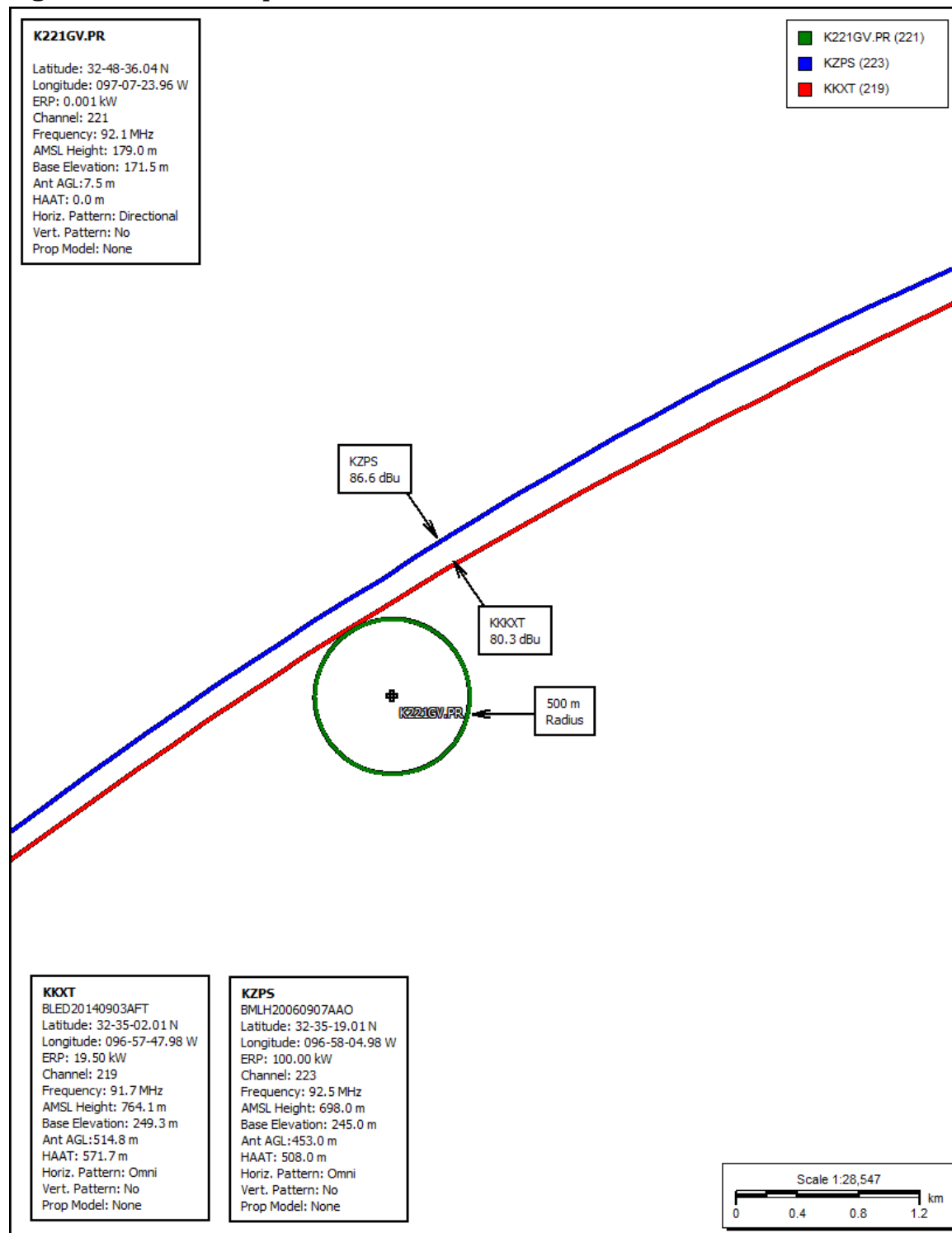


Figure 3. Distance to Interference Signal Level

<p>Proposed Antenna: Isotropic</p> <p>Proposed Power: 0.001 kW</p> <p>Antenna Height AGL: 10 meters</p> <p>Interference Contour: 120.3 dBu</p> <p>Artificial Rcv Antenna Height: 2 meters</p> <p>Distance (Free Space) Equation: $= (10^{((106.92 - [\text{desired dBu}] + [\text{ERP in dBk}]) / 20)}) * 1000$</p> <p>Field Strength (dBu) Equation: $= 106.92 - (20 * (\text{LOG10}[\text{DistMeters}] / 1000)) + [\text{ERP in dBk}]$</p>								
Fill in "yellow" cells								
Depression				Distance				
Angle	Antenna			from Ant.	Distance	Field Strength	Distance	Field Strength
Below	Relative	ERP	ERP	to Interf	rom Ant. to	in dBu @	from Ant.	in dBu @
Horizon	Field	in kW	in dBk	Contour	Artificial Plane	Artificial Plane	to Ground Level	Ground Level
0°	1.000	0.001	-30.00	6.78 m	infinite	---	infinite	---
-5°	1.000	0.001	-30.00	6.78 m	91.79 m	97.66 dBu	114.74 m	95.73 dBu
-10°	1.000	0.001	-30.00	6.78 m	46.07 m	103.65 dBu	57.59 m	101.71 dBu
-15°	1.000	0.001	-30.00	6.78 m	30.91 m	107.12 dBu	38.64 m	105.18 dBu
-20°	1.000	0.001	-30.00	6.78 m	23.39 m	109.54 dBu	29.24 m	107.60 dBu
-25°	1.000	0.001	-30.00	6.78 m	18.93 m	111.38 dBu	23.66 m	109.44 dBu
-30°	1.000	0.001	-30.00	6.78 m	16.00 m	112.84 dBu	20.00 m	110.90 dBu
-35°	1.000	0.001	-30.00	6.78 m	13.95 m	114.03 dBu	17.43 m	112.09 dBu
-40°	1.000	0.001	-30.00	6.78 m	12.45 m	115.02 dBu	15.56 m	113.08 dBu
-45°	1.000	0.001	-30.00	6.78 m	11.31 m	115.85 dBu	14.14 m	113.91 dBu
-50°	1.000	0.001	-30.00	6.78 m	10.44 m	116.54 dBu	13.05 m	114.61 dBu
-55°	1.000	0.001	-30.00	6.78 m	9.77 m	117.13 dBu	12.21 m	115.19 dBu
-60°	1.000	0.001	-30.00	6.78 m	9.24 m	117.61 dBu	11.55 m	115.67 dBu
-65°	1.000	0.001	-30.00	6.78 m	8.83 m	118.00 dBu	11.03 m	116.07 dBu
-70°	1.000	0.001	-30.00	6.78 m	8.51 m	118.32 dBu	10.64 m	116.38 dBu
-75°	1.000	0.001	-30.00	6.78 m	8.28 m	118.56 dBu	10.35 m	116.62 dBu
-80°	1.000	0.001	-30.00	6.78 m	8.12 m	118.73 dBu	10.15 m	116.79 dBu
-85°	1.000	0.001	-30.00	6.78 m	8.03 m	118.83 dBu	10.04 m	116.89 dBu
-90°	1.000	0.001	-30.00	6.78 m	8.00 m	118.86 dBu	10.00 m	116.92 dBu

Figure 4. Image of Support Structure



Figure 5. Fill-in Contour Map

