

Engineering Statement
In Support of a
Minor Change Application
K237GG – Denver, CO
FID No. 141906
BLFT-20160608AAD

The Corporate Engineering Department of the Crawford Broadcasting Company, on behalf of its subsidiary, KLZ Radio, Inc. (“KLZ”), has prepared this Engineering Statement and associated exhibits to accompany an Application for Construction Permit to change the power and antenna of translator station K237GG (BLFT-20160608AAD, FID No. 141906).

KLZ proposes herein to make minor changes to the facilities of K237GG, specifically changing the antenna to a Kathrein-Scala CA5-FM/CP/RM with the main lobe oriented 73 degrees True and changing the maximum Effective Radiated Power to 99 watts horizontal and vertical. The antenna location will not change and will be mounted at an elevation of 2251 meters above mean sea level (AMSL) and 9 meters above ground level (AGL), which corresponds to a height above average terrain (HAAT) of 230 meters.

Table 1 below shows a channel spacing study from the proposed site for K237GG on channel 237D.

The spacing study shows that KDHT (239C0) in Denver and KRKS-FM (234C) in Lafayette, CO are second- and third-adjacent to the proposed facility, respectively. KDHT produces a field strength of 134.3 dBu at the proposed site. There are no dwellings within the +40 dB 174.3 dBu contour of the proposed facility and as such the contour has zero population. Similarly, KRKS-FM produces a field strength of 77.78 dBu at the proposed site. There are no dwellings within the +40 dB 117.78 dBu contour of the proposed facility, and as such the contour has zero population.

The nearest point on the nearest dwelling, which is situated at an elevation of 2234 meters AMSL, is 74.39 meters from the antenna; the farthest point on the dwelling is 90.64 meters from the antenna. The vertical angles to the nearest and farthest points from the antenna on the dwelling at a height above grade of 2 meters are -11.4 and -9.4 degrees, respectively. From the manufacturer’s published elevation pattern for the Kathrein-Scala CA5-FM/CP/RM antenna, the worst-case relative field for that range of vertical angles is 0.956. As such, a free-space contour value of $117.78/0.956$, or 123.2 dBu, would produce no greater than 117.78 dBu anywhere within the footprint of the dwelling at a height of 2 meters above grade.

Figure 1 is an aerial view showing the free-space 123.2 dBu contour of the proposed facility. This view clearly shows that the 123.2 dBu contour does not contact the nearest point on the dwelling. As such, there are no dwellings within the 117.78 dBu contour. The only building within the footprint of the contour is the radio equipment shelter at the site.

Based on the fact of zero population within the 117.78 dBu contour (and inclusively within the 174.3 dBu contour), 47 C.F.R. §74.1204(d) of the Commission's Rules applies with respect to KDHT and KRKS-FM.

The spacing study identifies KALC (290C) in Denver as a 10.6/10.8 MHz IF short spacing to the proposed facility. Because the proposed facility will operate with less than 100 watts ERP, in accordance with 47 C.F.R. §74.1204(g) it will not be subject to intermediate frequency separation requirements.

The study shows that KATC-FM (236C) in Colorado Springs, CO is first-adjacent channel to the proposed facility. Figure 2 shows that the proposed facility will not produce any prohibited overlap to the KATC-FM protected 60 dBu contour.

The study shows that K236CQ (236D), which is owned by KLZ, is first-adjacent to the proposed facility. The applicant has filed simultaneously with the instant application a minor change application (LMS File No. 0000235187) reducing the ERP of K236CQ to 200 watts. Figure 2 shows that there is no prohibited overlap to the proposed modified K236CQ 60 dBu contour by the proposed 54 dBu contour.

Figure 3 and Table 2 show the proposed directional antenna pattern for use by K237GG. Table 3 is a tabulation of the distances to pertinent contours used in the study for the proposed operation of K237GG.

Figure 4 shows the proposed 60 dBu contour of K237GG will be completely contained within the licensed 2 mV/m daytime contour and 25-mile radius of station KLVZ(AM).

It was concluded that the new proposed operation of K237GG with the increased ERP and new directional antenna pattern will not cause any harmful interference to any existing stations and will be in full compliance with the Commission's rules.

Respectfully submitted,



W.C. Alexander, CPBE, AMD, DRB
Director of Engineering
Crawford Broadcasting Company



1/11/2024

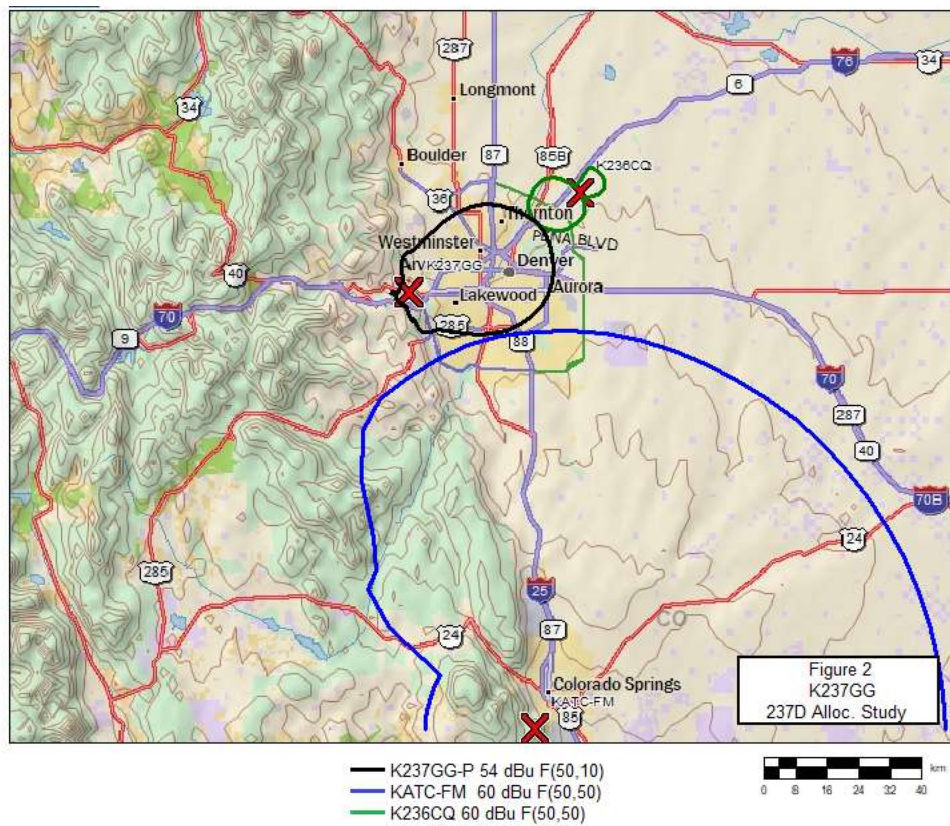
Table 1
Crawford Broadcasting Company

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FM Study for: K237GG Database LMS - Date: 1/4/2024 39-43-47
 Location: DENVER, CO Channel Class: 105-14-11
 [*] by HAAT indicates calculated as missing in database.

Call	City, State	Chan	Cl.	Freq	kW	Latitude	Dist.	Required	
Status	Proponent	File Number			HAAT	Longitude	Azm.	Clear (km)	Site

>>>>>> Study For Channel 237 95.3 mHz <<<<<<<									
KDHT	DENVER, CO	239	C	95.7	100 +	39-43-59	0.4	93	
LIC	Fac. No. 48967	BLH -20071003ACN			346	105-14-12	356.3	-92.6	SHORT
KRKSFM	LAFAYETTE, CO	234	C	94.7	100 +	40-04-20	39.4	93	
LIC	Fac. No. 58631	BMLH -19981009KC			300	105-21-17	345.1	-53.6	SHORT
KALC	DENVER, CO	290	C	105.9	96	39-43-58	0.3	29	
LIC	Fac. No. 59601	BLH -20050602ABO			524	105-14-10	3.9	-28.7	SHORT
KALC-A	DENVER, CO	290	C	105.9	25 +	39-43-59	0.4	29	
LIC	Fac. No. 59601	BXLH -20101020AAI			487	105-14-12	356.3	-28.6	SHORT
KATCFM	COLORADO SPRINGS, CO	236	C	95.1	58	38-44-43	114.0	111	
LIC	Fac. No. 66249	BLH -20060622ABT			695	104-51-42	163.4	3.0	CLOSE
K236CQ	COMMERCE CITY, CO	236	D	95.1	.25 +	39-57-26	50.2	32	
LIC	Fac. No. 142176	BLFT -20161018AAK			96	104-43-47	59.6	18.2	CLEAR
K237BI	BRECKENRIDGE, ETC., CO	237	D	95.3	.054+	39-27-51	70.6	44	
LIC	Fac. No. 44009	BLFT -19860130TC			393	105-58-58	245.5	26.6	CLEAR



K237GG
Max ERP = 0.099 kW
Orientation = 0 Deg.
Max Scale = 1.000
RMS(C) = 0.433 Field
Composite

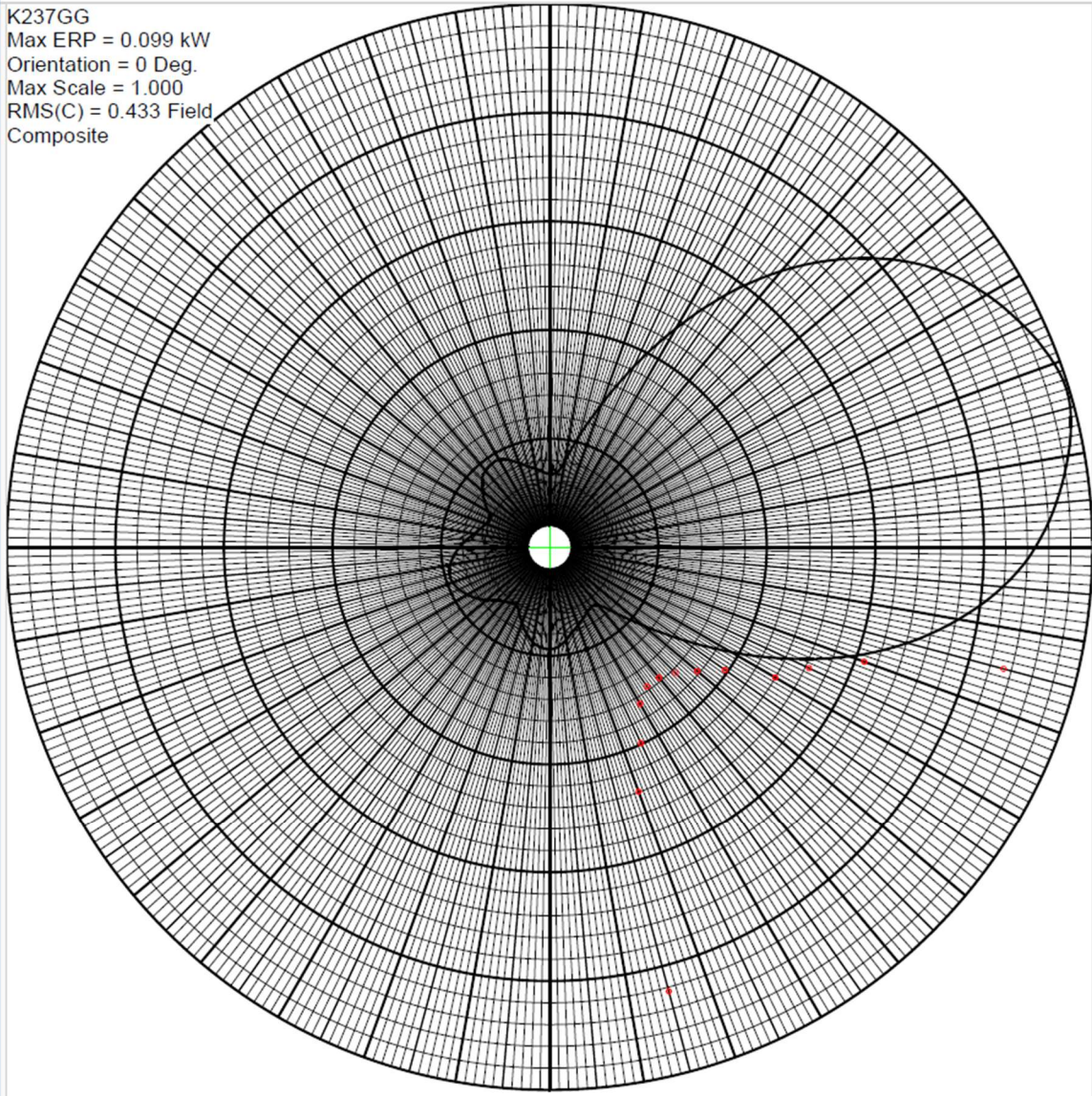


Figure 3 –Directional Antenna Pattern

Table 2
K237GG Kathrein-Scala CA5-FM/CP/RM
Horizontal Plane Pattern
Pattern RMS: .4326 Field
Main Lobe Oriented 73 Deg. True **

Azimuth	Field	dBk	ERP(kW)	Azimuth	Field	dBk	ERP(kW)
0	0.135	-27.44	0.00	180	0.188	-24.56	0.00
5	0.137	-27.31	0.00	185	0.185	-24.70	0.00
10	0.161	-25.91*	0.00	190	0.178	-25.04	0.00
15	0.213	-23.48*	0.00	195	0.165	-25.69	0.00
20	0.280	-21.10*	0.01	200	0.149	-26.58	0.00
25	0.367	-18.75*	0.01	205	0.133	-27.57	0.00
30	0.465	-16.69*	0.02	210	0.123	-28.25	0.00
35	0.568	-14.96*	0.03	215	0.125	-28.11	0.00
40	0.664	-13.60*	0.04	220	0.130	-27.76	0.00
45	0.749	-12.55*	0.06	225	0.139	-27.18	0.00
50	0.824	-11.73	0.07	230	0.151	-26.46	0.00
55	0.885	-11.10	0.08	235	0.164	-25.75	0.00
60	0.930	-10.67	0.09	240	0.175	-25.18	0.00
65	0.964	-10.36	0.09	245	0.184	-24.75	0.00
70	0.989	-10.14	0.10	250	0.190	-24.47	0.00
75	0.993	-10.10	0.10	255	0.191	-24.42	0.00
80	0.970	-10.31	0.09	260	0.186	-24.65	0.00
85	0.937	-10.61	0.09	265	0.177	-25.08	0.00
90	0.895	-11.01	0.08	270	0.166	-25.64	0.00
95	0.838	-11.58	0.07	275	0.154	-26.29	0.00
100	0.765	-12.37	0.06	280	0.141	-27.06	0.00
105	0.682	-13.37	0.05	285	0.132	-27.63	0.00
110	0.588	-14.66*	0.03	290	0.125	-28.11	0.00
115	0.486	-16.31*	0.02	295	0.123	-28.25	0.00
120	0.386	-18.31*	0.01	300	0.130	-27.76	0.00
125	0.296	-20.62*	0.01	305	0.146	-26.76*	0.00
130	0.224	-23.04*	0.00	310	0.161	-25.91	0.00
135	0.171	-25.38*	0.00	315	0.176	-25.13	0.00
140	0.139	-27.18*	0.00	320	0.184	-24.75	0.00
145	0.134	-27.50	0.00	325	0.187	-24.61	0.00
150	0.138	-27.25	0.00	330	0.186	-24.65	0.00
155	0.145	-26.82	0.00	335	0.177	-25.08	0.00
160	0.153	-26.35	0.00	340	0.165	-25.69	0.00
165	0.162	-25.85	0.00	345	0.154	-26.29	0.00
170	0.174	-25.23	0.00	350	0.147	-26.70	0.00
175	0.184	-24.75	0.00	355	0.139	-27.18	0.00
** 73	1.000	-10.04	0.099				

Table 3
Crawford Broadcasting Company
FM Contour Distances
K237GG-P

Azi. Deg.	ERP kW	HAAT m	70 dBu km	60 dBu km	54 dBu km	40 dBu km
0	0.002	404	2.7	6.7	10.6	25.57
5	0.002	430	2.8	6.9	10.9	26.71
10	0.003	440	3.2	7.9	12.1	29.42
15	0.004	446	4.1	9.6	14.2	34.38
20	0.008	448	5.1	11.2	16.7	39.85
25	0.013	474	6.3	13.3	20.3	47.04
30	0.021	502	7.6	15.5	23.6	54.23
35	0.032	520	8.9	17.7	26.8	60.22
40	0.044	528	10.0	19.4	29.4	64.61
45	0.056	535	10.8	20.9	31.6	68.12
50	0.067	538	11.5	21.9	33.4	70.81
55	0.078	547	12.1	22.9	35.1	73.27
60	0.086	555	12.5	23.7	36.4	75.06
65	0.092	552	12.8	24.0	37.0	75.84
70	0.097	543	12.9	24.1	37.1	75.96
75	0.098	540	12.9	24.1	37.1	75.87
80	0.093	538	12.7	23.7	36.5	75.12
85	0.087	538	12.4	23.4	35.8	74.21
90	0.079	533	12.0	22.7	34.7	72.71
95	0.070	524	11.5	21.8	33.2	70.41
100	0.058	510	10.8	20.5	31.0	67.12
105	0.046	493	10.0	18.9	28.6	63.06
110	0.034	470	8.9	17.1	25.9	57.77
115	0.023	447	7.6	15.1	22.9	51.73
120	0.015	436	6.4	13.2	20.0	45.85
125	0.009	438	5.3	11.5	17.1	40.40
130	0.005	451	4.3	10.0	14.7	35.55
135	0.003	460	3.4	8.3	12.7	31.13
140	0.002	457	2.8	7.1	11.3	27.84
145	0.002	442	2.7	6.8	10.9	26.83
150	0.002	410	2.8	6.8	10.8	26.08
155	0.002	354	2.8	6.8	10.4	24.62
160	0.002	313	2.9	6.7	10.1	23.76
165	0.003	200	2.7	5.7	8.3	19.60
170	0.003	103	2.3	4.3	6.2	13.79
175	0.003	115	2.4	4.7	6.7	15.03

Table 3
Crawford Broadcasting Company
FM Contour Distances
K237GG-P

Azi. Deg.	ERP kW	HAAT m	70 dBu km	60 dBu km	54 dBu km	40 dBu km
180	0.003	76	2.1	3.9	5.5	12.34
185	0.003	52	1.8	3.2	4.5	10.21
190	0.003	30	1.4	2.4	3.3	7.51
195	0.003	30	1.3	2.3	3.2	7.23
200	0.002	30	1.3	2.2	3.0	6.86
205	0.002	30	1.2	2.1	2.9	6.48
210	0.001	30	1.2	2.0	2.8	6.23
215	0.002	41	1.4	2.4	3.3	7.29
220	0.002	30	1.2	2.1	2.9	6.41
225	0.002	30	1.2	2.1	2.9	6.63
230	0.002	30	1.3	2.2	3.1	6.91
235	0.003	30	1.3	2.3	3.2	7.20
240	0.003	30	1.4	2.4	3.3	7.45
245	0.003	30	1.4	2.4	3.4	7.64
250	0.004	30	1.4	2.5	3.4	7.77
255	0.004	30	1.4	2.5	3.4	7.79
260	0.003	30	1.4	2.4	3.4	7.69
265	0.003	30	1.4	2.4	3.3	7.49
270	0.003	30	1.4	2.3	3.2	7.25
275	0.002	71	1.9	3.4	4.8	10.82
280	0.002	64	1.7	3.1	4.4	9.86
285	0.002	30	1.2	2.1	2.9	6.46
290	0.002	30	1.2	2.0	2.8	6.28
295	0.001	30	1.2	2.0	2.8	6.23
300	0.002	30	1.2	2.1	2.9	6.41
305	0.002	30	1.3	2.2	3.0	6.79
310	0.003	30	1.3	2.3	3.2	7.14
315	0.003	30	1.4	2.4	3.3	7.47
320	0.003	30	1.4	2.4	3.4	7.64
325	0.003	30	1.4	2.4	3.4	7.71
330	0.003	30	1.4	2.4	3.4	7.69
335	0.003	48	1.7	3.0	4.2	9.57
340	0.003	110	2.3	4.3	6.2	13.87
345	0.002	191	2.6	5.4	7.9	18.50
350	0.002	277	2.7	6.2	9.3	21.93
355	0.002	365	2.7	6.6	10.3	24.51

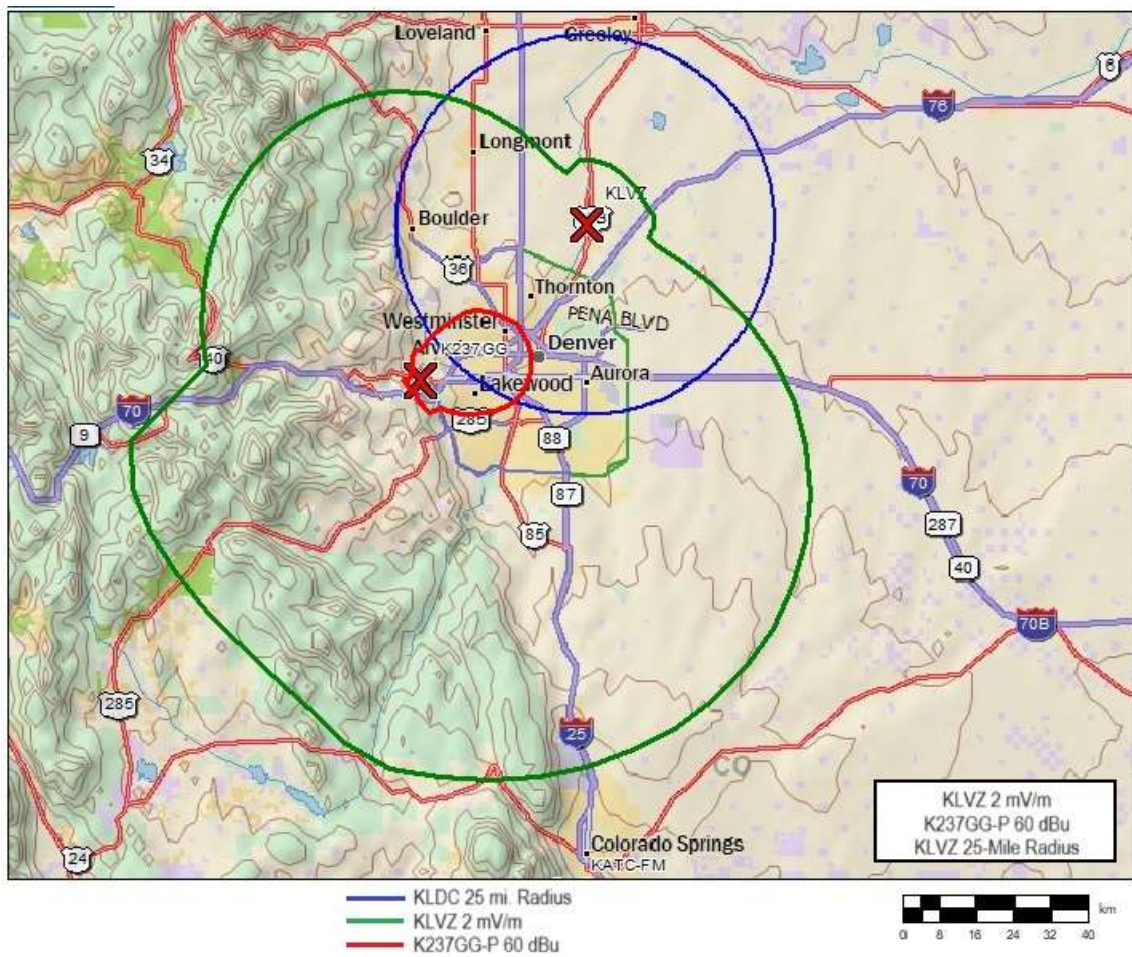


Figure 4 - K237GG-P 60 dBu, KLVZ 2 mV/m daytime contour and 25-mile radius.