

Technical Certifications

This exhibit for the minor modification of K221GC demonstrates compliance with all engineering standards and requirements specified in the applicable FCC rules and regulations. This application proposes a change in the ERP, antenna pattern, a minor change in the tower geographical coordinates, and the ASR information. These changes are indicated below:

	Licensed	Minor Mod
Channel / Class	221D	221D
ASRN	1052434	1001786
Geographical Coordinates	30 17 53.9 97 49 55.5	30 17 54.0 97 49 55.0
Tower AGL	64 m	12.5 m
Site AMSL	309 m	304.8 m
COR AGL	12 m	86 m
COR AMSL	321 m	391 m
HAAT	89.7 m	159.7 m
ERP	0.001 kW (V DA)	0.25 kW (H&V DA)

GLOBE terrain data

EMF acknowledges this proposed minor modification causes prohibited overlap with the KYLR licensed facility, file number BLED-20060901ACQ. KYLR has been granted a construction permit, file number 0000210508, which once constructed and licensed will not receive prohibited overlap from this K221GC proposed modification.

Note the K221GC proposed geographic coordinates and center of radiation above ground are the same as KVLR 223C3 Sunset Valley, TX, file number BLED-20170321AAM. KVLR has been granted a construction permit, file number 0000210507, which once constructed and licensed will allow the K221GC transmit antenna to occupy the vacated KVLR antenna location. K221GC and KVLR will not occupy the same center of radiation on the same tower at the same time.

Channel Study

REFERENCE		CH# 221D - 92.1 MHz, Pwr= 0.25 kW DA, HAAT= 159.7 M, COR= 391 M								DISPLAY DATES	
30 17 53.7 N.		Average Protected F(50-50)= 16.5 km								DATA 08-04-23	
97 49 55.0 W.		Standard Directional								SEARCH 08-07-23	

CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr (kW)	INT (km)	PRO (km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG.	HAAT (M)	COR (M)	LICENSEE	(Overlap in km)	

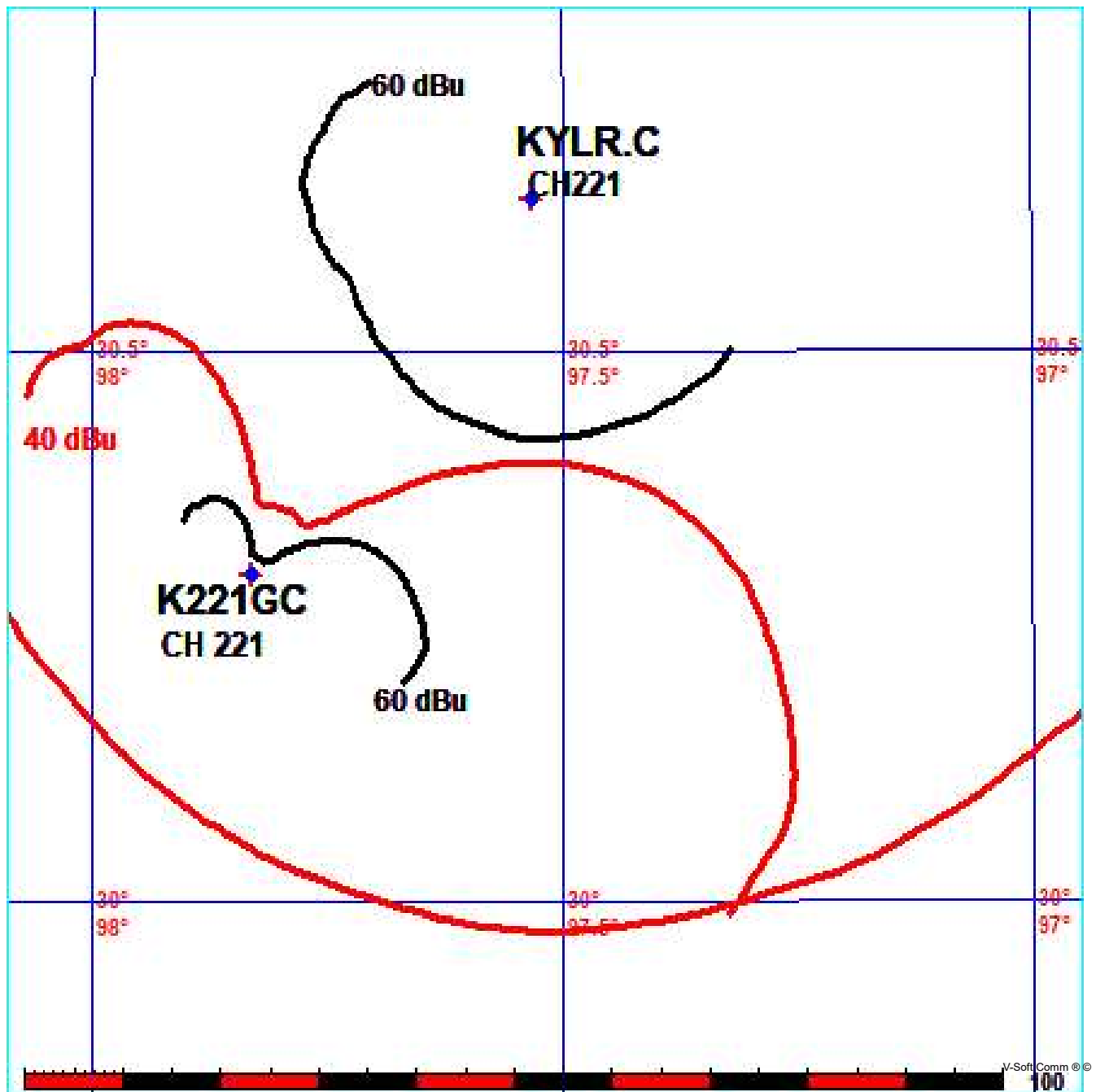
221A	KYLR	LIC	NCN	42.4	35.60	30 32 04.70	2.500	76.1	23.5	-49.2*	-29.5*
Hutto			TX	222.5	BLED20060901ACQ	97 34 53.00	137	343	Educational Media Foundati		
221A	KYLR	CP	ZCN	37.2	47.53	30 38 18.90	2.000	71.7	22.1	-32.6*	6.7
Hutto			TX	217.3	0000210508	97 31 53.90	119	321	Educational Media Foundati		
223C3	KVLR	CP	NCN	47.9	4.15	30 19 23.80	4.000	3.2	36.2	-2.8	-32.0*
Sunset Valley			TX	227.9	0000210507	97 47 59.50	255	479	Educational Media Foundati		
223C3	KVLR	LIC	NCN	0.0	0.00	30 17 53.70	4.900	2.8	28.9	-6.0*	-29.0*
Sunset Valley			TX	0.0	BLED20170321AAM	97 49 55.00	161	391	Educational Media Foundati		
221A	KNBT	LIC	ZCN	203.8	68.92	29 43 50.80	6.000	71.4	17.5	-14.1*	7.8
New Braunfels			TX	23.7	BLH20030501AAZ	98 07 13.00	95	327	New Braunfels Communicatio		
221D	K221GC!	LIC	DVN	0.0	0.00	30 17 53.70	0.001		---	Reference---	
Austin			TX	0.0	BLFT20180620AAA	97 49 55.00		321	Educational Media Foundati		
219A	KOOP	LIC	CN	103.0	15.51	30 16 00.70	3.000	1.6	13.2	-3.8*	1.3
Hornsby			TX	283.0	BLED19950103KA	97 40 28.00	26	193	Texas Educational Broadcas		
219A	KVRX	LIC	CN	103.0	15.51	30 16 00.70	3.000	1.6	13.2	-3.8*	1.3
Austin			TX	283.0	BLED199411123KA	97 40 28.00	26	193	The University Of Texas At		
220A	KLLR	LIC	NCN	252.5	36.22	30 11 58.70	2.000	31.8	21.0	-0.8	11.9
Dripping Springs			TX	72.3	BLED20150825AAC	98 11 29.10	86	456	Educational Media Foundati		
218A	767967	APP	DCN	174.8	25.33	30 04 16.80	0.100	0.1	2.5	9.6	21.7
Buda			TX	354.8	0000166599	97 48 28.60	35	241	Poderosa Broadcasting, Inc		
218A	@767967	APP	DCN	174.8	25.33	30 04 16.80	0.100	0.1	2.5	9.6	21.7
Buda			TX	354.8	0000166599	97 48 28.60	35	241	Poderosa Broadcasting, Inc		
222C3	KNRG	LIC	NCN	108.5	102.46	30 00 06.80	8.000	58.9	39.8	24.3	34.2
New Ulm			TX	289.0	BLH20190308AAZ	96 49 21.90	174	290			
220A	VA8855	VAC	N	157.5	95.57	29 30 12.85	6.000	39.9	26.1	38.1	43.8
Gonzales			TX	337.7		97 27 13.98	100	203	From CDBS		
220C2	KALD	LIC	NCN	73.3	118.81	30 35 57.70	30.000	61.9	40.5	42.0	61.4
Caldwell			TX	253.9	BLED20100618ARG	96 38 32.90	118	220	Houston Christian Broadcas		
222A	KIIZ-FM	LIC	CN	10.1	91.46	31 06 29.60	6.000	38.8	25.8	46.0	62.3
Killeen			TX	190.1	BLH20090113ABH	97 39 51.10	73	312	Ihm Licenses, LLC		
222C2	KRNH	LIC	NCN	257.8	121.12	30 03 42.80	20.000	66.7	45.2	48.1	72.4
Kerrville			TX	77.2	BLH20070406AAQ	99 03 44.10	203	753	Radio Ranch, LLC		
220C3	766262	CP	ZCN	155.2	96.42	29 30 36.40	20.000	30.2	20.0	48.4	49.5
Gonzales			TX	335.4	0000166682	97 24 51.60	37	131	Texas Public Radio		

Terrain database is GLOBE 30 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= West Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with exclamation marks need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
***affixed to 'IN' or 'OUT' values = site inside restricted contour.
Reference station has protected zone issue: Mexico

FMCommander Single Allocation Study - 08-07-2023 - GLOBE 30 Sec
K221GC's Overlaps (In= -32.61 km, Out= 6.71 km)

K221GC CH 221 D DA
Lat= 30 17 53.70, Lng= 97 49 55.00
0.25 kW 159.7 m HAAT, 391 m COR
Prot.= 60 dBu, Intef.= 40 dBu

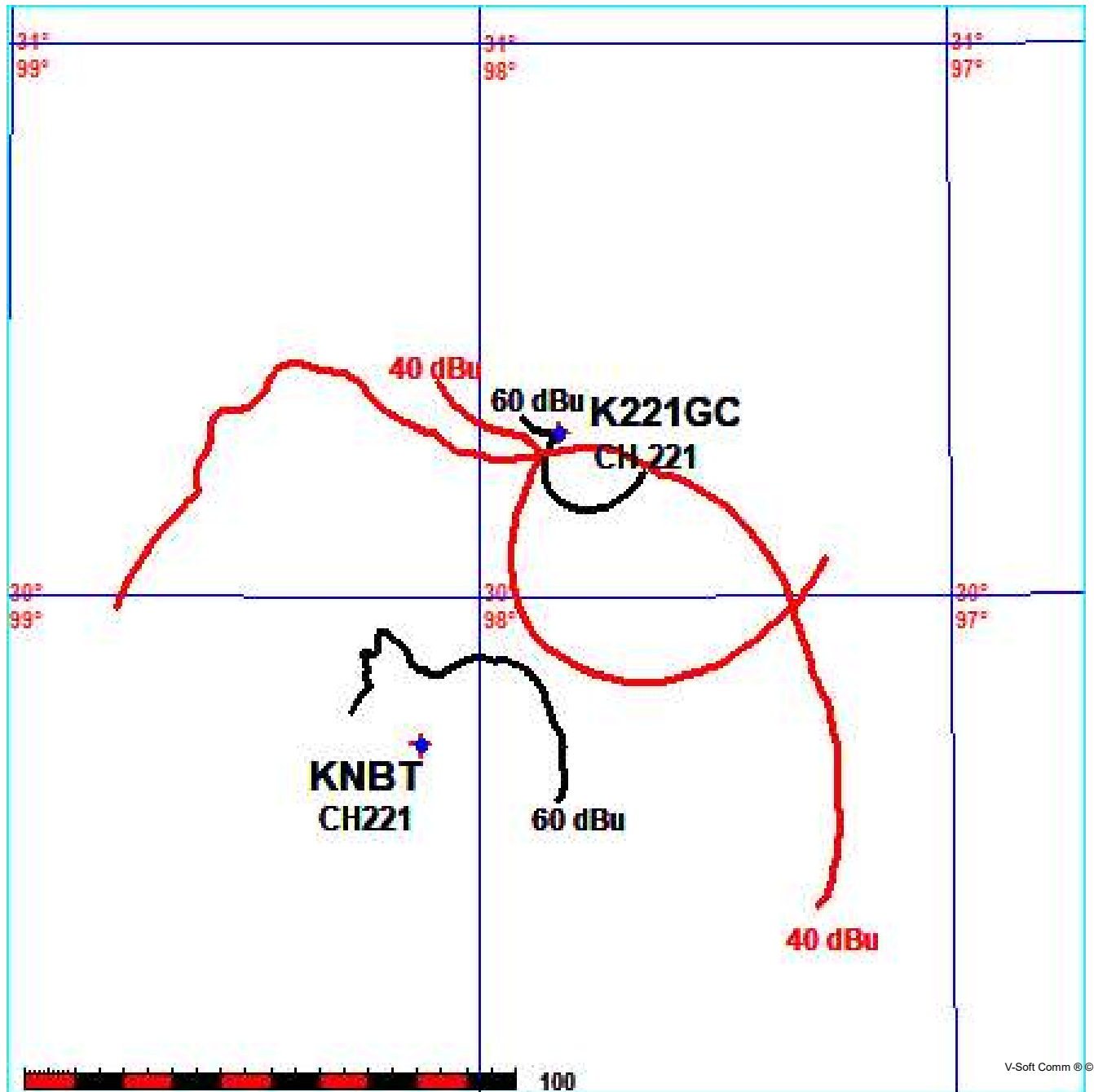
KYLR-C CH 221 A 73.215 Z 0000210508
Lat= 30 38 18.90, Lng= 97 31 53.90
2.0 kW 119 m HAAT, 321 m COR
Prot.= 60 dBu, Intef.= 40 dBu



FMCommander Single Allocation Study - 08-07-2023 - GLOBE 30 Sec
K221GC's Overlaps (In= -14.15 km, Out= 7.84 km)

K221GC CH 221 D DA
Lat= 30 17 53.70, Lng= 97 49 55.00
0.25 kW 159.7 m HAAT, 391 m COR
Prot.= 60 dBu, Intef.= 40 dBu

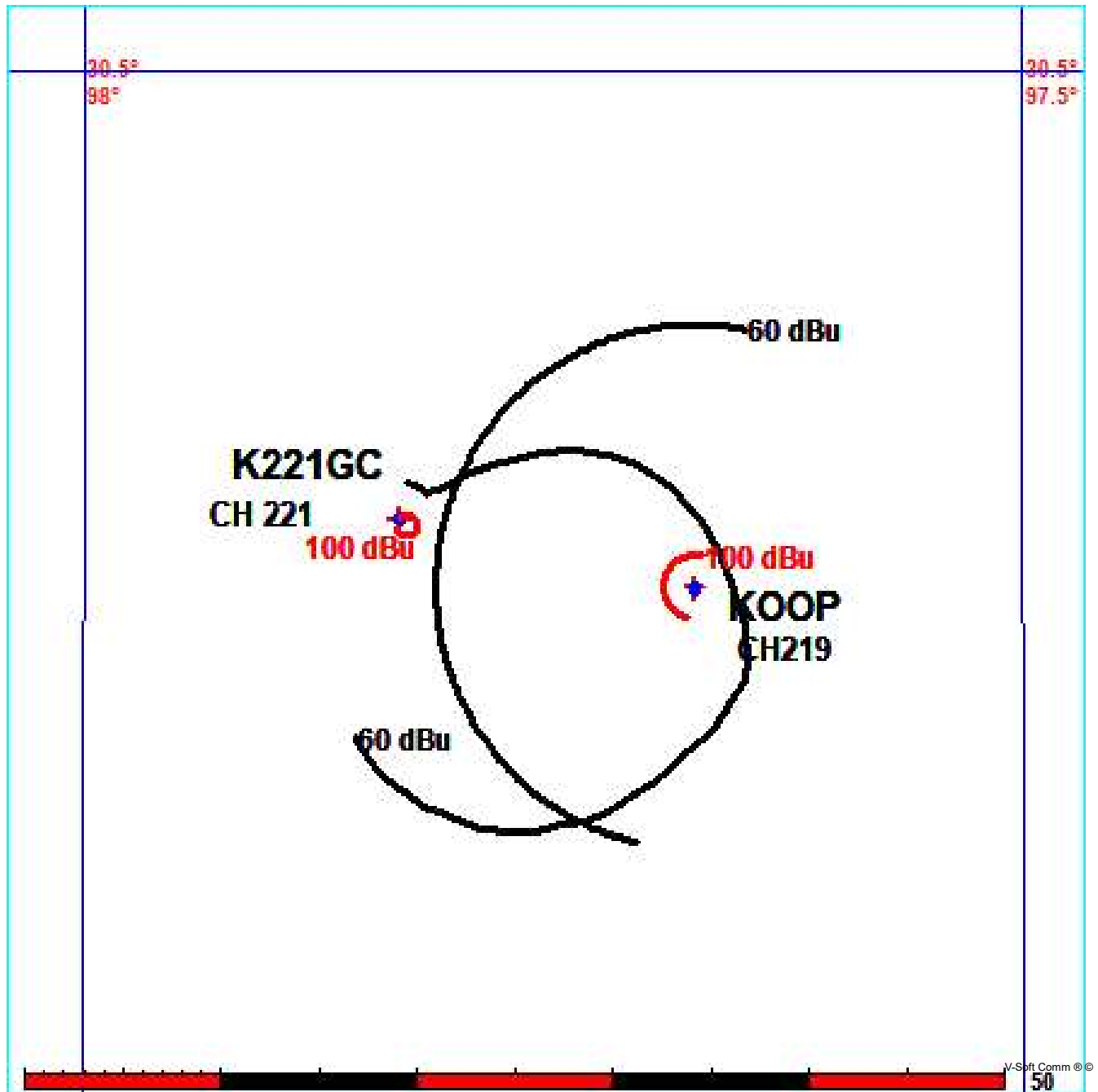
KNBT CH 221 A 73.215 Z BLH20030501AAZ
Lat= 29 43 50.80, Lng= 98 07 13.00
6.0 kW 95 m HAAT, 327 m COR
Prot.= 60 dBu, Intef.= 40 dBu



FMCommander Single Allocation Study - 08-07-2023 - GLOBE 30 Sec
K221GC's Overlaps (In= -3.77 km, Out= 1.33 km)

K221GC CH 221 D DA
Lat= 30 17 53.70, Lng= 97 49 55.00
0.25 kW 159.7 m HAAT, 391 m COR
Prot.= 60 dBu, Intef.= 100 dBu

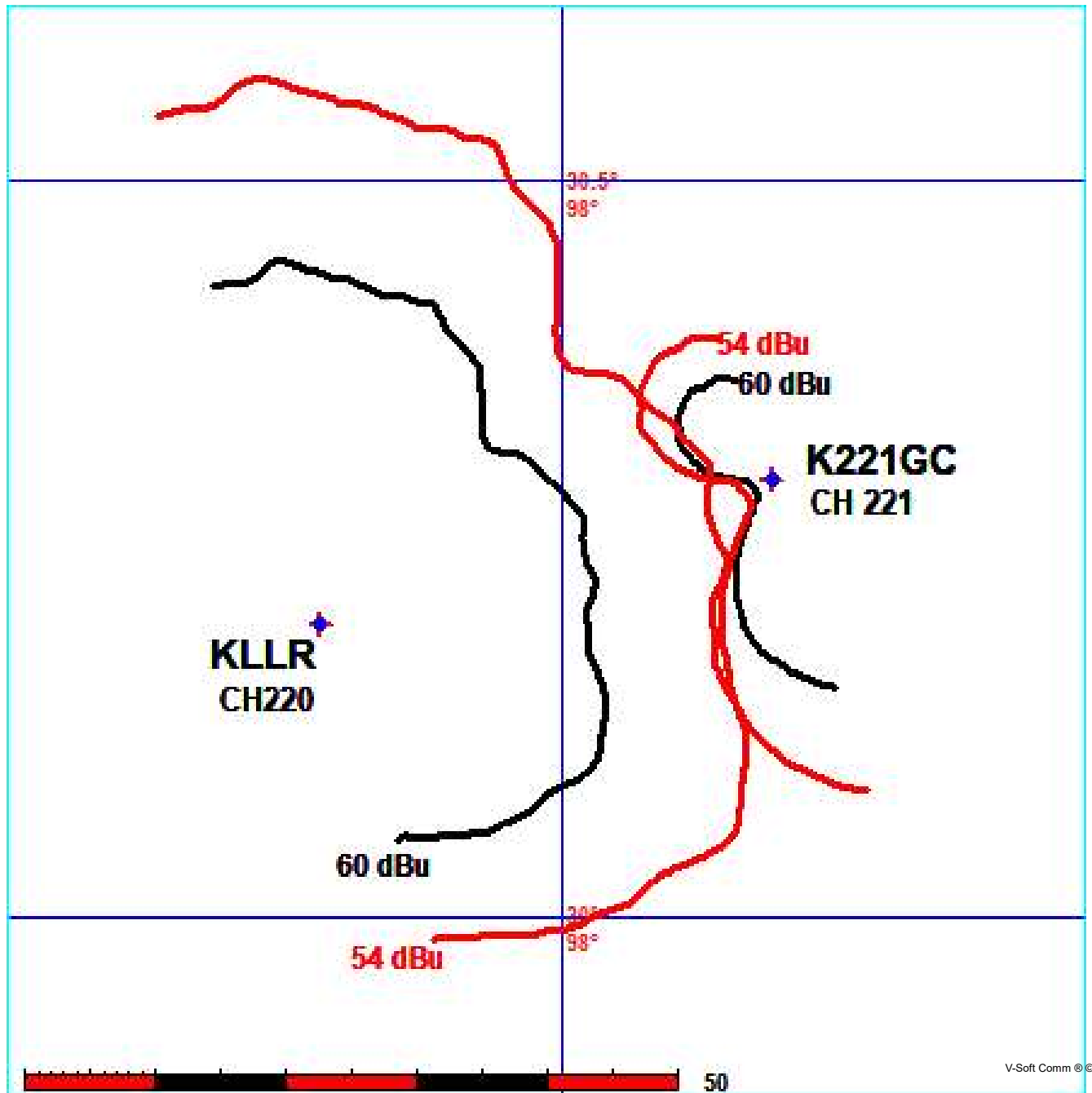
KOOP CH 219 A BLED19950103KA
Lat= 30 16 00.70, Lng= 97 40 28.00
3.0 kW 26 m HAAT, 193 m COR
Prot.= 60 dBu, Intef.= 100 dBu



FMCommander Single Allocation Study - 08-07-2023 - GLOBE 30 Sec
K221GC's Overlaps (In= -0.83 km, Out= 11.86 km)

K221GC CH 221 D DA
Lat= 30 17 53.70, Lng= 97 49 55.00
0.25 kW 159.7 m HAAT, 391 m COR
Prot.= 60 dBu, Intef.= 54 dBu

KLLR CH 220 A 73.215 N BLED20150825AAC
Lat= 30 11 58.70, Lng= 98 11 29.10
2.0 kW 86 m HAAT, 456 m COR
Prot.= 60 dBu, Intef.= 54 dBu



Compliance with C.F.R. 74.1204

The proposed FM Translator to operate on channel 221 is located within the protected 60dBu contour of second adjacent channel station KVLR, channel 223C3 Sunset Valley, TX. According to 74.1204(a)(3), in order to protect second and third adjacent facilities, the difference in dBu between the two facilities must not exceed 40dBu.

The proposed ERP for K221GC:	250 watts
The proposed COR for K221GC:	86 meters
KVLR F(50/50) contour at proposed site:	96.7 dBu
The F(50/10) contour of proposed K221GC	136.7 dBu

The predicted distance to the 136.7dbu interfering contour is 16.3 meters. Taking into account the antenna vertical elevation pattern for the Scala CA2-CP single bay antenna and the height above ground of 86m, it has been determined that the interfering contour of 136.7dbu does not reach the ground. As seen in Exhibit 1-A1, the lowest elevation for this interfering contour is 78.5m above ground at a distance of 11.6m from the antenna.

There are no regularly occupied structures at the base of the tower and there are no structures which are tall enough to enter the 16.3 meter predicted interference distance.

Therefore, EMF respectfully requests a waiver of C.F.R. 74.1204 based on no population within the area of predicted interference.

EXHIBIT 1 - A2
74.1204(d) Showing
K221GC
Austin, TX

ERP (kw): 0.25
Height of Antenna above Ground (m): 86
Translator's IX Contour: 136.7
Antenna Type: Scala CA2-CP/1

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1.000	0.2500	16.2170	86.000
5	0.990	0.2450	16.0548	84.601
10	0.979	0.2396	15.8764	83.243
15	0.952	0.2266	15.4386	82.004
20	0.920	0.2116	14.9196	80.897
25	0.877	0.1923	14.2223	79.989
30	0.829	0.1718	13.4439	79.278
35	0.772	0.1490	12.5195	78.819
40	0.715	0.1278	11.5951	78.547
45	0.647	0.1047	10.4924	78.581
50	0.570	0.0812	9.2437	78.919
55	0.487	0.0593	7.8977	79.531
60	0.388	0.0376	6.2922	80.551
65	0.292	0.0213	4.7354	81.708
70	0.187	0.0087	3.0326	83.150
75	0.095	0.0023	1.5406	84.512
80	0.045	0.0005	0.7298	85.281
85	0.032	0.0003	0.5189	85.483
90	0.030	0.0002	0.4865	85.513

Human exposure to excess levels of radiofrequency radiation

The proposed facility is to be built using a 1-bay circularly polarized Scala CA2-CP antenna.

According to OET 65, "Applicants and licensees should be able to calculate, based on considerations of frequency, power and antenna characteristics the distance from their transmitter where their signal produces an RF field equal to, or greater than, the 5% threshold limit. The applicant or licensee then shares responsibility for compliance in any accessible area or areas within this 5% "contour" where the appropriate limits are found to be exceeded."

The proposed facility's maximum contribution to RF on the site is $1.36\mu\text{W}/\text{cm}^2$ at a distance of 23 meters from the tower, which is less than 0.7% of the uncontrolled (public) exposure limit and less than 0.2% of the controlled limit.

Therefore, because the proposed facility will not cause an RF field that is equal to or greater than 5% of the $200\mu\text{W}/\text{cm}^2$ limit for uncontrolled exposure at any point, the proposed facility complies with the requirements of OET 65.

EMF will fully cooperate with other site users to temporarily reduce power or cease broadcasting, as necessary, to protect workers and others having access to the site from excessive levels of RF Radiation.