

September 2015
FM Translator K255CU
Texarkana, Texas Channel 254D
Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The proposed translator transmitter site is located within the 60 dBu protected contour of third-adjacent channel station KTAL-FM 251C0 Texarkana. The proposed site is 59.31 km from the KTAL-FM transmitter site at a bearing of 350 degrees True. Given the KTAL-FM antenna's 421 meter HAAT and 100 kW ERP along this radial, KTAL-FM places a 69.1 dBu contour at the translator transmitter site. The corresponding interfering contour from the translator is $69.1 + 40 = 109.1$ dBu. Given that the transmitting antenna will be installed at a height of 91 meters above ground, and taking into consideration the vertical plane pattern of the Shively 6812B-2 antenna, the attached calculations demonstrate that the interference area will not reach ground level, except in a region between 27 and 72 meters from the tower. This area is unpopulated, as is depicted in the attached aerial photograph. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KTAL-FM.

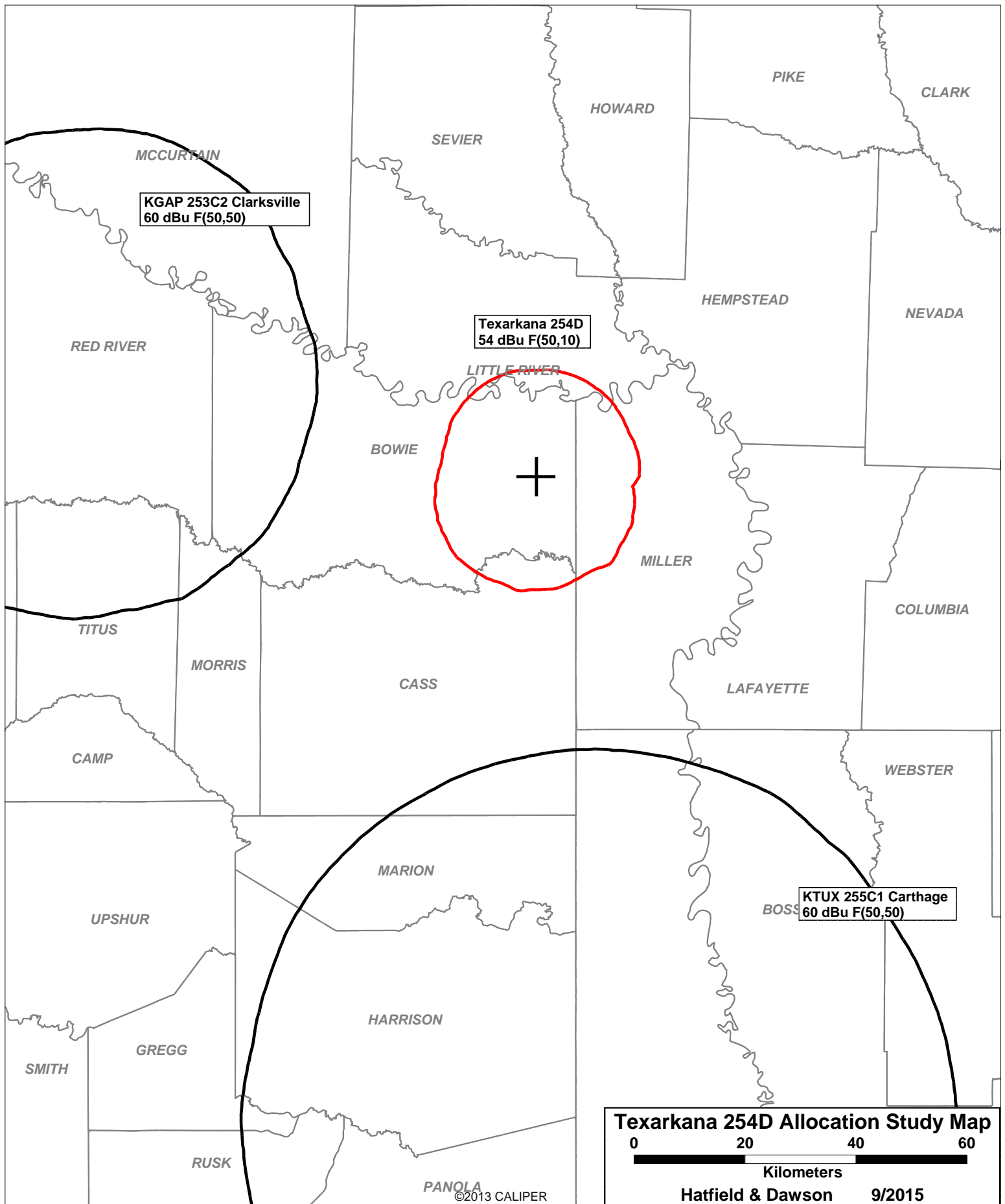
The proposed translator transmitter site is located within the 60 dBu protected contour of third-adjacent channel translator station K257FY Texarkana. The two translators will be located on the same tower. For the sake of calculation we presume that the two will be located 0.1 km apart. Given the K257FY antenna's 250 watt ERP, K257FY places a 120.9 dBu contour at the translator transmitter site per a Free Space calculation. The corresponding interfering contour from the translator is $120.9 + 40 = 160.9$ dBu. This contour would extend just 0.9 meters from the antenna per a Free Space calculation and would not reach ground level. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to K257FY.

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SEARCH PARAMETERS FM Database Date: 150914
 Channel: 254A 98.7 MHz Page 1
 Latitude: 33 25 45
 Longitude: 94 7 11
 Safety Zone: 50 km
 Job Title: TEX 254

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KTAL-FM LIC	TEXARKANA TX	BMLH-10418ABH	251C0 98.1	100.000 415.0	32-54-11 094-00-20	169.7	59.31 -26.69	86 SHORT
K253BO LIC	TEXARKANA AR	BMLFT-41002AAZ	253D 98.5	0.170 DA 145.0	33-25-45 094-07-11	0.0	0.00 0.00	0 TRANS
KGAP LIC	CLARKSVILLE TX	BLH-960111KM	253C2 98.5	50.000 94.0	33-36-47 095-01-03	284.1 SS	85.86 -20.14	106 SHORT
NEW-T APP	WHITE OAK TX	BNPFT-30317III	253D 98.5	0.250 126.0	32-31-09 094-52-08	214.8	122.84 0.00	0 TRANS
KLBQ LIC	EL DORADO AR	BLH-940318KH	254C3 98.7	14.000 91.0	33-12-30 092-41-16	100.1	135.57 -6.43	142 SHORT
K255BH LIC	GLENWOOD AR	BLFT-80925AGK	255D 98.9	0.250 161.0	34-18-38 093-32-04	28.7	111.76 0.00	0 TRANS
KTUX LIC	CARTHAGE TX	BLH-850412KC	255C1 98.9	100.000 219.0	32-23-19 094-01-10	175.3	115.78 -17.22	133 SHORT
K253BO CP NOTE:	TEXARKANA TX THIS IS THE TRANSLATOR BEING MODIFIED	BPFT-50421ABS	255D 98.9	0.220 123.0	33-25-45 094-07-11 (K255CU)	0.0	0.00 0.00	0 TRANS
K257FY CP MOD	TEXARKANA TX	BMPFT-50421ABR	257D 99.3	0.250 145.0	33-25-45 094-07-11	0.0	0.00 0.00	0 TRANS

===== END OF FM SPACING STUDY FOR CHANNEL 254 =====



Free Space Interference Area Calculator

Interference Area to KTAL-FM

Antenna Height: 91 meters AGL
 Contour Level: 109.1 dBu equals 0.3 V/m
 ERP in Watts: 220 Watts

Maximum distance
 to interfering contour is: 1196.6 feet equals 364.7 meters

Antenna: 6812B-2

Depression Angle (degrees)	Shively 6812B-2 Relative Field	Adjusted ERP (Watts)	Free Space Distance To 109.1 dBu Contour Along the depression angle	Horizontal Distance (meters)	Contour AGL (meters)
-90	0.000	0.0	0.0 meters	0	91.0
-89	0.018	0.1	6.6	0.1	84.4
-88	0.036	0.3	13.1	0.5	77.9
-87	0.052	0.6	19.0	1.0	72.1
-86	0.069	1.0	25.2	1.8	65.9
-85	0.085	1.6	31.0	2.7	60.1
-84	0.101	2.2	36.8	3.9	54.4
-83	0.117	3.0	42.7	5.2	48.6
-82	0.133	3.9	48.5	6.8	43.0
-81	0.148	4.8	54.0	8.4	37.7
-80	0.163	5.8	59.4	10.3	32.5
-79	0.177	6.9	64.6	12.3	27.6
-78	0.191	8.0	69.7	14.5	22.9
-77	0.205	9.2	74.8	16.8	18.1
-76	0.219	10.6	79.9	19.3	13.5
-75	0.231	11.7	84.2	21.8	9.6
-74	0.244	13.1	89.0	24.5	5.5
-73	0.256	14.4	93.4	27.3	1.7 XXXX
-72	0.267	15.7	97.4	30.1	-1.6 XXXX
-71	0.278	17.0	101.4	33.0	-4.9 XXXX
-70	0.288	18.2	105.0	35.9	-7.7 XXXX
-69	0.298	19.5	108.7	38.9	-10.5 XXXX
-68	0.307	20.7	112.0	41.9	-12.8 XXXX
-67	0.315	21.8	114.9	44.9	-14.8 XXXX

(Straight down)

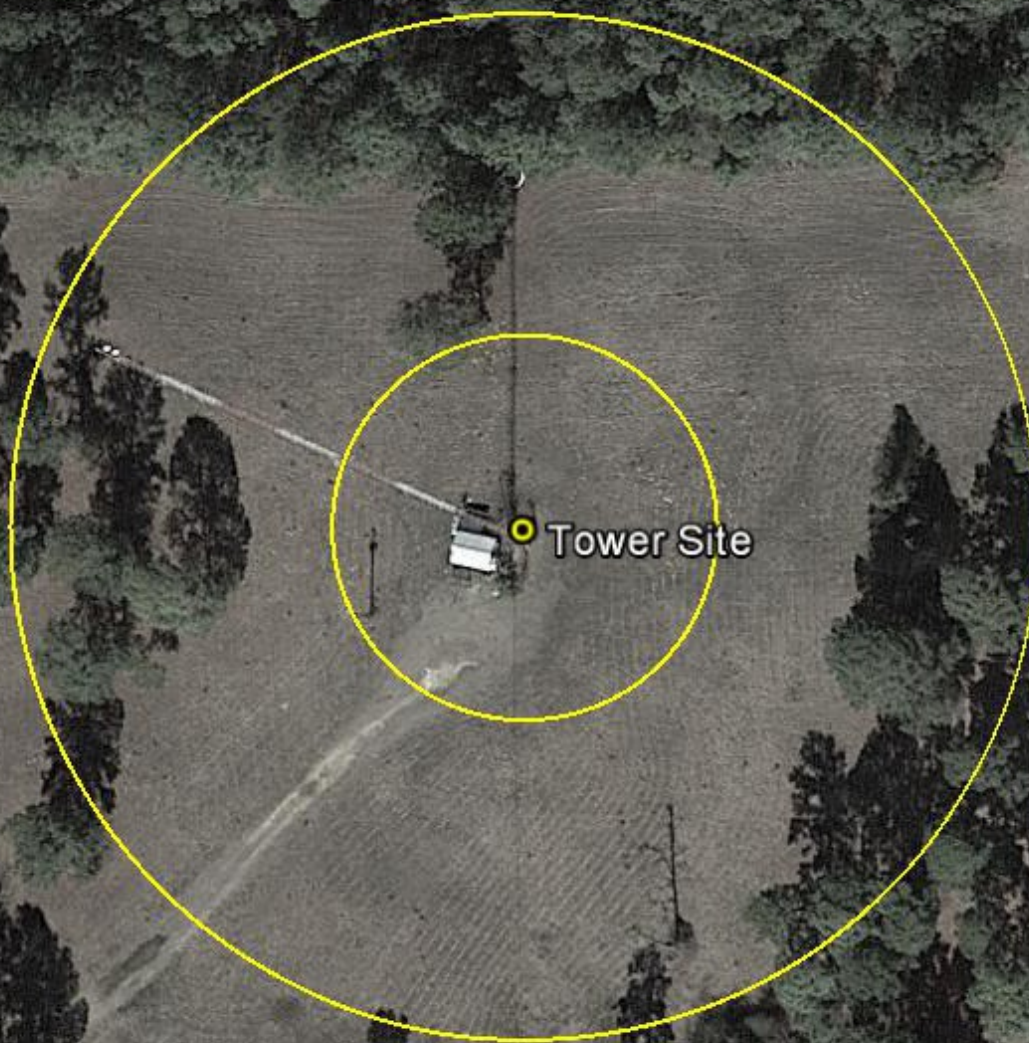
-66	0.323	23.0	117.8	47.9	-16.6	XXXX
-65	0.329	23.8	120.0	50.7	-17.7	XXXX
-64	0.335	24.7	122.2	53.6	-18.8	XXXX
-63	0.340	25.4	124.0	56.3	-19.5	XXXX
-62	0.343	25.9	125.1	58.7	-19.5	XXXX
-61	0.346	26.3	126.2	61.2	-19.4	XXXX
-60	0.348	26.6	126.9	63.5	-18.9	XXXX
-59	0.349	26.8	127.3	65.6	-18.1	XXXX
-58	0.348	26.6	126.9	67.3	-16.6	XXXX
-57	0.347	26.5	126.6	68.9	-15.1	XXXX
-56	0.344	26.0	125.5	70.2	-13.0	XXXX
-55	0.340	25.4	124.0	71.1	-10.6	XXXX
-54	0.335	24.7	122.2	71.8	-7.8	XXXX
-53	0.328	23.7	119.6	72.0	-4.5	XXXX
-52	0.320	22.5	116.7	71.9	-1.0	XXXX
-51	0.311	21.3	113.4	71.4	2.9	
-50	0.300	19.8	109.4	70.3	7.2	
-49	0.288	18.2	105.0	68.9	11.7	
-48	0.274	16.5	99.9	66.9	16.7	
-47	0.259	14.8	94.5	64.4	21.9	
-46	0.243	13.0	88.6	61.6	27.2	
-45	0.225	11.1	82.1	58.0	33.0	
-44	0.206	9.3	75.1	54.0	38.8	
-43	0.185	7.5	67.5	49.3	45.0	
-42	0.162	5.8	59.1	43.9	51.5	
-41	0.139	4.3	50.7	38.3	57.7	
-40	0.114	2.9	41.6	31.9	64.3	
-39	0.087	1.7	31.7	24.7	71.0	
-38	0.059	0.8	21.5	17.0	77.8	
-37	0.030	0.2	10.9	8.7	84.4	
-36	0.000	0.0	0.0	0.0	91.0	
-35	0.031	0.2	11.3	9.3	84.5	
-34	0.064	0.9	23.3	19.4	77.9	
-33	0.097	2.1	35.4	29.7	71.7	
-32	0.131	3.8	47.8	40.5	65.7	
-31	0.166	6.1	60.5	51.9	59.8	
-30	0.202	9.0	73.7	63.8	54.2	
-29	0.239	12.6	87.2	76.2	48.7	
-28	0.276	16.8	100.7	88.9	43.7	
-27	0.313	21.6	114.2	101.7	39.2	
-26	0.351	27.1	128.0	115.1	34.9	
-25	0.389	33.3	141.9	128.6	31.0	
-24	0.426	39.9	155.4	141.9	27.8	
-23	0.464	47.4	169.2	155.8	24.9	
-22	0.502	55.4	183.1	169.8	22.4	
-21	0.539	63.9	196.6	183.5	20.6	

-20	0.575	72.7	209.7	197.1	19.3
-19	0.611	82.1	222.8	210.7	18.4
-18	0.646	91.8	235.6	224.1	18.2
-17	0.680	101.7	248.0	237.2	18.5
-16	0.713	111.8	260.0	250.0	19.3
-15	0.745	122.1	271.7	262.5	20.7
-14	0.775	132.1	282.7	274.3	22.6
-13	0.804	142.2	293.2	285.7	25.0
-12	0.832	152.3	303.4	296.8	27.9
-11	0.857	161.6	312.6	306.8	31.4
-10	0.881	170.8	321.3	316.4	35.2
-9	0.903	179.4	329.3	325.3	39.5
-8	0.923	187.4	336.6	333.4	44.1
-7	0.941	194.8	343.2	340.6	49.2
-6	0.956	201.1	348.7	346.8	54.6
-5	0.969	206.6	353.4	352.1	60.2
-4	0.980	211.3	357.4	356.6	66.1
-3	0.989	215.2	360.7	360.2	72.1
-2	0.995	217.8	362.9	362.7	78.3
-1	0.999	219.6	364.4	364.3	84.6
0	1.000	220.0	364.7	364.7	91.0

(Horizontal)

Texarkana 254D

Rings indicate the region between 27 and 72 meters from the tower. This is the interference area to KTAL-FM, and is unpopulated.



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Texarkana, Texas Channel 254D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 254D (98.9 MHz) with an effective radiated power of 220 watts. Operation is proposed with an antenna to be mounted on an existing tower with FCC Antenna Structure Registration Number 1053162.

RF Exposure Calculations

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation of Texarkana 254D will produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the Texarkana 254D antenna system have been

Hatfield & Dawson Consulting Engineers

made assuming that the antenna will radiate 100% power straight down to a point 2 meters above ground at the base of the tower (89 meters below the antenna). Under this worst-case assumption, the highest calculated ground level power density from Texarkana 255D occurs at the base of the antenna support structure. At this point the power density is calculated to be $1.9 \mu\text{W}/\text{cm}^2$, which is 0.2% of $1000 \mu\text{W}/\text{cm}^2$ (the FCC standard for controlled environments) and 1.0% of $200 \mu\text{W}/\text{cm}^2$ (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of Texarkana 254D alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.