

TECHNICAL SUMMARY  
APPLICATION FOR CONSTRUCTION PERMIT  
TV STATION KQCW-DT  
MUSKOGEE, OKLAHOMA  
CHANNEL 20 1000 KW (DA) 432 m

1. Purpose of Application: It is proposed to relocate the KQCW-DT transmitter site to an existing tower (ASRN 1011335) and operate on channel 20 with a maximum nondirectional (ND) ERP of 1000 kW (elliptical polarization) and an antenna height above average terrain (HAAT) of 432 meters. No other changes are proposed including no change in the overall structure height of the existing tower.

2. City Coverage Compliance: The instant modification application will provide the requisite city grade (48 dBu) signal to all of Muskogee (see Figure 1).

3. Section 73.622(f)(5) Compliance: As noted above, it is proposed operate on channel 20 with a ND antenna maximum ERP of 1000 kW and an HAAT of 432 meters. These facilities exceed the nominal maximum facilities specified in Section 73.622(f)(8)(i). However, the proposed facilities have been calculated in accordance with the largest station provision of Section 73.622(f)(5). Muskogee, Oklahoma is located within the Tulsa, Oklahoma DMA. The largest station in the Tulsa, Oklahoma DMA is KOED-TV on channel 11 (BLEDT-20120419ABK) which is licensed to provide noise-limited 36 dBu, f(50,90) service to an area of 46,880 square kilometers whereas the proposed KQCW-DT operation is predicted to provide noise-limited 39.4 dBu, f(50,90) service to an area of 40,040 square kilometers (see Figure 2 attached). Clarification of the largest station provision is provided in the Report and Order and Further Notice of Proposed Rule Making in MM Docket No. 00-39 at paragraphs 73-74.

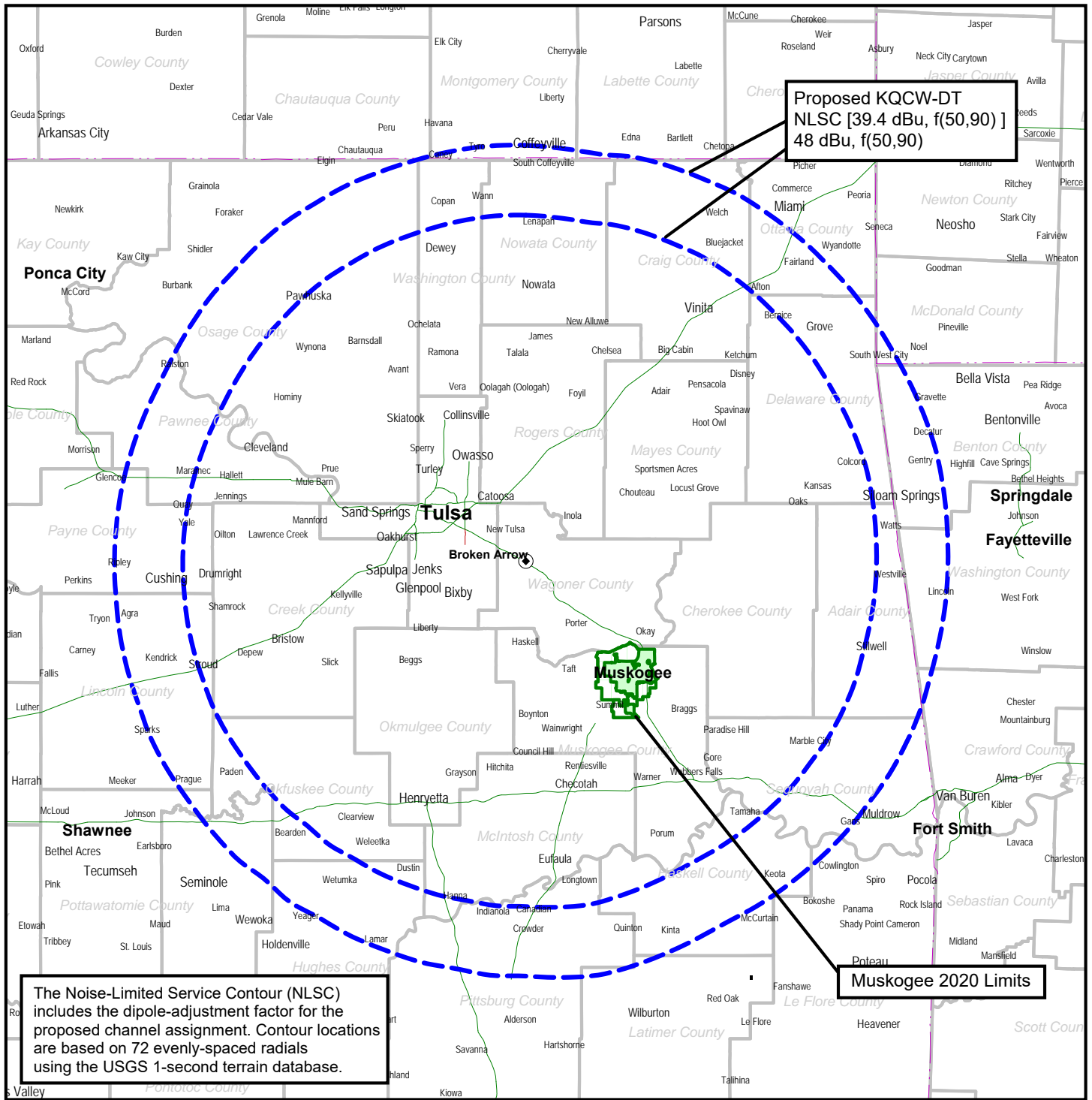
4. As demonstrated in the *TVStudy* analysis exhibit, the proposal complies with the FCC's interference protection requirements based on a cell size of 2.0 km and profile resolution of 1.0 points/km.

5. RFR Compliance: The proposed facilities were evaluated in terms of potential radiofrequency radiation (RFR) exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna will be located 409 meters above ground level. The total DTV ERP is 1300 kW (1000 kW horizontal polarization, 300 kW vertical polarization). A conservative vertical plane relative field value of 0.1 is presumed for the antenna's downward radiation (for angles below 10 degrees downward, see attached antenna data). The calculated power density at a point 2 meters above ground level is 2.62 uW/cm<sup>2</sup> which is 0.77% of the FCC's

recommended limit of  $339.3 \text{ uW/cm}^2$  for channel 20 for an uncontrolled environment. Therefore, based on the responsibility threshold of 5%, the proposal will comply with the RF emission rules.

Access to the transmitting site is restricted and appropriately marked with RFR warning signs. Also, as this is a multi-user site, a formal RFR protection protocol is in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to RFR exposure. Such measures include limiting the exposure time, wearing protective clothing, reducing power to an acceptable level or termination of transmitter output power altogether until workers leave the restricted area.

Figure 1



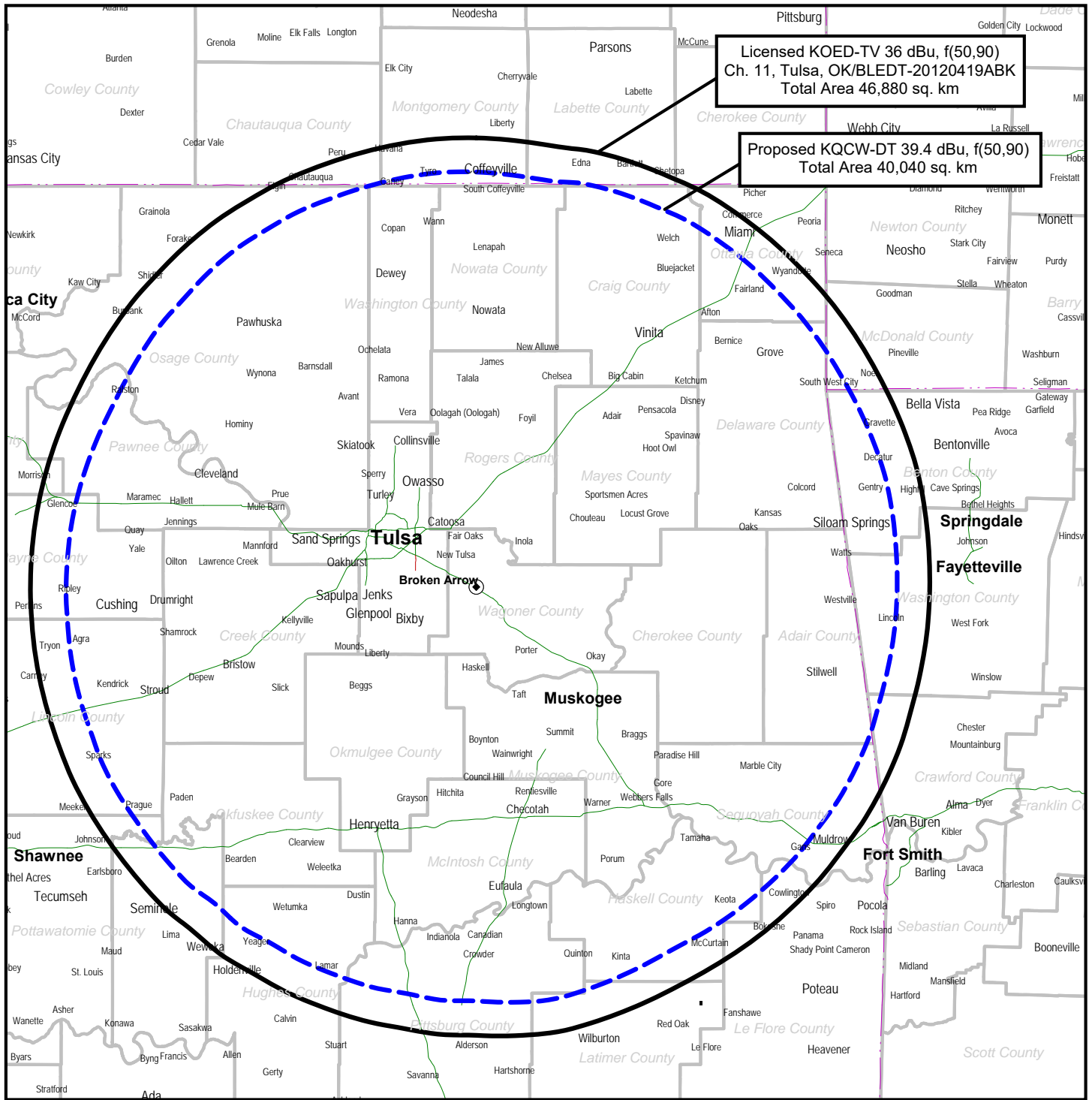
25 0 25 50 75  
Kilometers

## FCC PREDICTED COVERAGE CONTOURS

DTV STATION KQCW-DT  
MUSKOGEE, OKLAHOMA  
CH 20 1000 KW (ND) 432 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 2



## SECTION 73.622(f)(5) COMPLIANCE

DTV STATION KQCW-DT  
MUSKOGEE, OKLAHOMA  
CH 20 1000 KW (ND) 432 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

**PROPOSED KQCW-DT TVSTUDY ANALYSIS**

tvstudy v2.2.5 (4uoc83)  
Database: localhost, Study: KQCW-DT Application, Model: Longley-Rice  
Start: 2023.03.01 10:40:14

Study created: 2023.03.01 10:40:13

Study build station data: LMS TV 2023-02-28

Proposal: KQCW-DT D20 DT APP MUSKOGEE, OK  
File number: KQCW-DT Application  
Facility ID: 78322  
Station data: User record  
Record ID: 304  
Country: U.S.  
Zone: II

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KYTV	D19	DT	LIC	SPRINGFIELD, MO	BLANK0000172336	275.6 km
Yes	KAUT-TV	D19	DT	LIC	OKLAHOMA CITY, OK	BLANK0000121785	171.0
Yes	KAUT-TV	D19	DT	CP	OKLAHOMA CITY, OK	BLANK0000127590	171.0
No	KTEJ	D20	DT	LIC	JONESBORO, AR	BLEDT20110818AAQ	441.4
No	KLRA-CD	D20	DC	LIC	LITTLE ROCK, AR	BLANK0000004217	318.5
No	KTMJ-CD	D20	DC	LIC	TOPEKA, KS	BLANK0000122285	334.7
No	KNLJ	D20	DT	LIC	JEFFERSON CITY, MO	BLCDT20110121ACA	435.1
Yes	KFXK-TV	D20	DT	LIC	LONGVIEW, TX	BLANK00000071623	423.3
No	K20DN-D	D20	DC	LIC	WICHITA FALLS, TX	BLANK0000001589	353.6
Yes	KHBS	D21	DT	LIC	FORT SMITH, AR	BLCDT20031121AMR	138.8
No	KUOT-CD	D21	DC	LIC	OKLAHOMA CITY, OK	BLANK0000069721	176.7

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D20  
Latitude: 36 1 15.00 N (NAD83)  
Longitude: 95 40 33.00 W  
Height AMSL: 625.4 m  
HAAT: 432.0 m  
Peak ERP: 1000 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 0.75

39.4 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1000 kW	429.2 m	112.8 km
45.0	1000	449.8	114.5
90.0	1000	450.8	114.6
135.0	1000	439.3	113.7
180.0	1000	426.7	112.6
225.0	1000	429.4	112.8
270.0	1000	416.8	111.7
315.0	1000	414.7	111.5

ERP exceeds maximum [Proposal complies with the provisions of Section 73.622(f)(5)/largest station in the market]

ERP: 1000 kW ERP maximum: 726 kW

Distance to Canadian border: 1266.7 km

Distance to Mexican border: 876.0 km

Conditions at FCC monitoring station: Grand Island NE  
Bearing: 337.1 degrees Distance: 595.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 301.5 degrees Distance: 950.9 km

No land mobile station failures found

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%

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Interference to BLANK0000121785 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KAUT-TV	D19	DT	LIC	OKLAHOMA CITY, OK	BLANK0000121785	
Undesireds:	KQCW-DT	D20	DT	BL	MUSKOGEE, OK	DTVBL78322	153.5 km
	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	171.0
	KWCH-DT	D19	DT	LIC	HUTCHINSON, KS	BLANK0000190147	278.0
	KAMR-TV	D19	DT	LIC	AMARILLO, TX	BLCDT20080519ACZ	393.1
	KTVT	D19	DT	LIC	FORT WORTH, TX	BLANK0000203476	339.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
39064.9		1,637,333		38808.7		1,626,976	0.05 0.03
				37471.7		1,626,976	
				37452.0		1,626,488	
Undesired		Total IX		Unique IX, before		Unique IX, after	
KQCW-DT D20 DT BL		116.8		491			
KQCW-DT D20 DT APP		144.6		1,223		128.5	901
KWCH-DT D19 DT LIC		950.0		3,046		913.8	2,653
KAMR-TV D19 DT LIC		48.2		140		28.0	69
KTVT D19 DT LIC		250.2		5,826		250.2	5,826

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Interference to BLANK0000127590 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KAUT-TV	D19	DT	CP	OKLAHOMA CITY, OK	BLANK0000127590	
Undesireds:	KQCW-DT	D20	DT	BL	MUSKOGEE, OK	DTVBL78322	153.5 km
	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	171.0
	KWCH-DT	D19	DT	LIC	HUTCHINSON, KS	BLANK0000190147	278.0
	KAMR-TV	D19	DT	LIC	AMARILLO, TX	BLCDT20080519ACZ	393.1
	KTVT	D19	DT	LIC	FORT WORTH, TX	BLANK0000203476	339.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
40286.4		1,654,063		39962.2		1,642,542	0.08 0.04
				38529.8		1,643,240	
				38498.0		1,642,542	
Undesired		Total IX		Unique IX, before		Unique IX, after	
KQCW-DT D20 DT BL		116.8		468			
KQCW-DT D20 DT APP		152.6		1,401		140.6	1,162
KWCH-DT D19 DT LIC		997.7		3,213		969.6	2,905
KAMR-TV D19 DT LIC		48.1		175		32.0	106
KTVT D19 DT LIC		294.0		5,200		294.0	5,200

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Interference to BLANK0000071623 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KFXK-TV	D20	DT	LIC	LONGVIEW, TX	BLANK0000071623	
Undesireds:	KQCW-DT	D20	DT	BL	MUSKOGEE, OK	DTVBL78322	396.0 km
	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	423.3
	KTVT	D19	DT	LIC	FORT WORTH, TX	BLANK0000203476	191.1
	KLTL-TV	D20	DT	LIC	LAKE CHARLES, LA	BLEDT20100216ABR	277.8
	KTSH-CD	D20	DC	LIC	SHREVEPORT, LA	BLANK0000071739	113.3
	KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	193.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
30467.7		934,043		30192.0		919,558	-0.01 0.00
				931,791		919,558	
				29529.5		919,558	
Undesired		Total IX		Unique IX, before		Unique IX, after	
KQCW-DT D20 DT BL		4.0		0			
KTVT D19 DT LIC		201.4		4,837		64.5	2,560
KLTL-TV D20 DT LIC		91.2		4,060		87.2	4,040
KTSH-CD D20 DC LIC		357.7		3,202		353.7	3,182
KDTX-TV D21 DT LIC		149.0		2,431		12.1	154

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Interference to BLCDT20031121AMR LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KHBS	D21	DT	LIC	FORT SMITH, AR	BLCDT20031121AMR	
Undesireds:	KQCW-DT	D20	DT	BL	MUSKOGEE, OK	DTVBL78322	127.0 km
	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	138.8
	KKYK-CD	D21	DC	LIC	LITTLE ROCK, AR	BLANK0000062774	201.2
	KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	347.6
	KATV	D22	DT	LIC	LITTLE ROCK, AR	BLANK0000149936	201.9
	KOKI-TV	D22	DT	LIC	TULSA, OK	BLCDT20021127AGL	139.5
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
40266.9	631,770	35774.9	608,052	33954.5	565,761	34003.0 566,204	-0.14 -0.08

Undesired	Total IX		Unique IX, before		Unique IX, after	
KQCW-DT D20 DT BL	680.1	14,236	148.9	3,287		
KQCW-DT D20 DT APP	936.8	30,670			100.4	2,844
KKYK-CD D21 DC LIC	187.1	2,483	171.3	2,478	171.3	2,478
KDTX-TV D21 DT LIC	447.0	1,007	447.0	1,007	447.0	1,007
KATV D22 DT LIC	15.8	5	0.0	0	0.0	0
KOKI-TV D22 DT LIC	1037.4	35,514	506.2	24,565	201.0	7,688

Interference to BLCDT20031121AMR LIC scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KHBS	D21	DT	LIC	FORT SMITH, AR	BLCDT20031121AMR	
Undesireds:	KQCW-DT	D20	DT	BL	MUSKOGEE, OK	DTVBL78322	127.0 km
	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	138.8
	KKYK-CD	D21	DC	LIC	LITTLE ROCK, AR	BLANK0000062774	201.2
	KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	347.6
	KATV	D22	DT	APP	LITTLE ROCK, AR	BLANK0000211412	201.8
	KOKI-TV	D22	DT	LIC	TULSA, OK	BLCDT20021127AGL	139.5
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
40266.9	631,770	35774.9	608,052	33954.5	565,761	34003.0 566,204	-0.14 -0.08

Undesired	Total IX		Unique IX, before		Unique IX, after	
KQCW-DT D20 DT BL	680.1	14,236	148.9	3,287		
KQCW-DT D20 DT APP	936.8	30,670			100.4	2,844
KKYK-CD D21 DC LIC	187.1	2,483	171.3	2,478	171.3	2,478
KDTX-TV D21 DT LIC	447.0	1,007	447.0	1,007	447.0	1,007
KATV D22 DT APP	15.8	5	0.0	0	0.0	0
KOKI-TV D22 DT LIC	1037.4	35,514	506.2	24,565	201.0	7,688

Interference to proposal scenario 1  
1.16% interference received

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	
Undesireds:	KAUT-TV	D19	DT	LIC	OKLAHOMA CITY, OK	BLANK0000121785	171.0 km
	KHBS	D21	DT	LIC	FORT SMITH, AR	BLCDT20031121AMR	138.8

Service area		Terrain-limited		IX-free		Percent IX	
40151.3	1,392,866	39228.0	1,378,481	37938.2	1,362,541	3.29	1.16

Undesired	Total IX		Unique IX		Prct Unique IX	
KAUT-TV D19 DT LIC	233.4	2,836	233.4	2,836	0.59	0.21
KHBS D21 DT LIC	1056.4	13,104	1056.4	13,104	2.69	0.95

Interference to proposal scenario 2  
1.17% interference received

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KQCW-DT	D20	DT	APP	MUSKOGEE, OK	KQCW-DT Application	
Undesireds:	KAUT-TV	D19	DT	CP	OKLAHOMA CITY, OK	BLANK0000127590	171.0 km
	KHBS	D21	DT	LIC	FORT SMITH, AR	BLCDT20031121AMR	138.8

Service area		Terrain-limited		IX-free		Percent IX	
40151.3	1,392,866	39228.0	1,378,481	37906.0	1,362,411	3.37	1.17

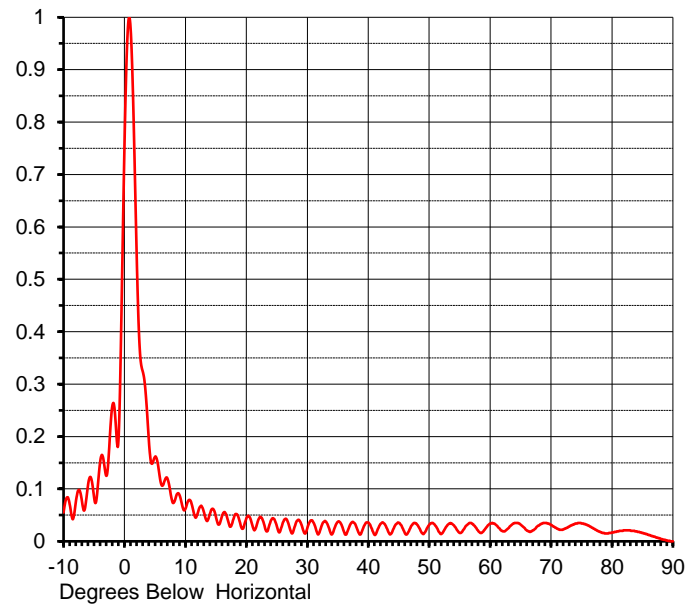
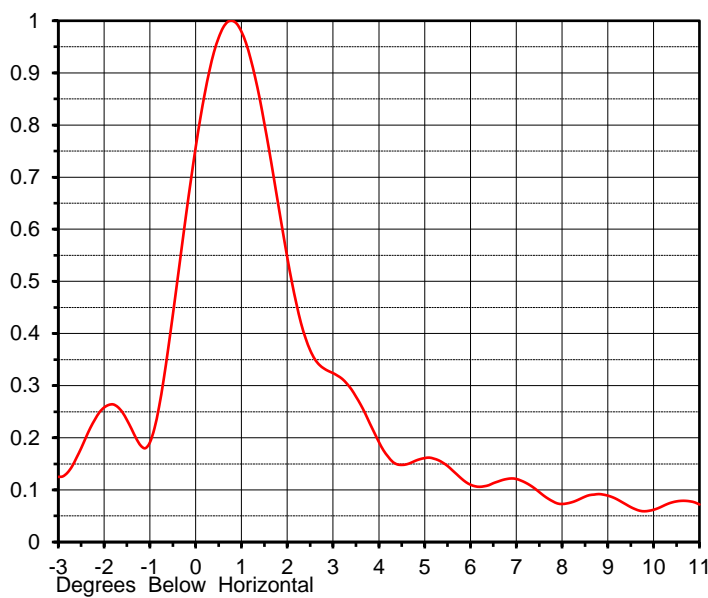
Undesired	Total IX		Unique IX		Prct Unique IX	
KAUT-TV D19 DT CP	265.6	2,966	265.6	2,966	0.68	0.22
KHBS D21 DT LIC	1056.4	13,104	1056.4	13,104	2.69	0.95

## ELEVATION PATTERN

Proposal No. **C-80010**  
 Date **17-Feb-23**  
 Call Letters **KQCW**  
 Channel **20**  
 Frequency **509 MHz**  
 Antenna Type **TFU-31EST/VP-R 04**

RMS Directivity at Main Lobe **28.0 ( 14.47 dB )**  
 RMS Directivity at Horizontal **16.0 ( 12.04 dB )**  
**Calculated**

Beam Tilt **0.75 deg**  
 Pattern Number **31E280075**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.055	10.0	0.062	30.0	0.025	50.0	0.031	70.0	0.031
-9.0	0.071	11.0	0.072	31.0	0.036	51.0	0.030	71.0	0.024
-8.0	0.074	12.0	0.053	32.0	0.017	52.0	0.014	72.0	0.023
-7.0	0.078	13.0	0.057	33.0	0.038	53.0	0.031	73.0	0.028
-6.0	0.106	14.0	0.052	34.0	0.013	54.0	0.031	74.0	0.034
-5.0	0.085	15.0	0.047	35.0	0.037	55.0	0.016	75.0	0.034
-4.0	0.151	16.0	0.048	36.0	0.019	56.0	0.029	76.0	0.031
-3.0	0.125	17.0	0.039	37.0	0.031	57.0	0.034	77.0	0.024
-2.0	0.258	18.0	0.047	38.0	0.029	58.0	0.021	78.0	0.018
-1.0	0.191	19.0	0.034	39.0	0.020	59.0	0.021	79.0	0.015
0.0	0.757	20.0	0.044	40.0	0.036	60.0	0.034	80.0	0.017
1.0	0.979	21.0	0.030	41.0	0.013	61.0	0.031	81.0	0.019
2.0	0.546	22.0	0.042	42.0	0.033	62.0	0.020	82.0	0.021
3.0	0.324	23.0	0.029	43.0	0.026	63.0	0.025	83.0	0.021
4.0	0.192	24.0	0.039	44.0	0.020	64.0	0.035	84.0	0.019
5.0	0.161	25.0	0.029	45.0	0.035	65.0	0.032	85.0	0.016
6.0	0.110	26.0	0.036	46.0	0.016	66.0	0.021	86.0	0.012
7.0	0.121	27.0	0.030	47.0	0.028	67.0	0.021	87.0	0.009
8.0	0.073	28.0	0.030	48.0	0.032	68.0	0.030	88.0	0.005
9.0	0.089	29.0	0.033	49.0	0.014	69.0	0.035	89.0	0.002
								90.0	0.000

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