

APPLICATION FOR CONSTRUCTION PERMIT

K22OK-D – WACO, TEXAS
FACILITY ID: 190132
CHANNEL 22 – 2.5 kW ERP DA

DIGITAL NETWORKS—SOUTHWEST, LLC

AUGUST 2021

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Digital Networks-Southwest, LLC** ("Southwest"), licensee of digital low power television station K22OK-D at Waco, Texas, and are in support of their application for construction permit to modify that facility.¹ This application seeks to modify the current license for the facility, which is assigned LMS File No. 0000121629.

K22OK-D is licensed to operate on television channel 22 with a maximum effective radiated power of 3.2 kW at a center of radiation of 152.4 meters above mean sea level, 45.7 meters above ground level, utilizing a composite directional antenna. The proposed facility would operate on television channel 22 with a maximum effective radiated power of 2.5 kW. The proposed center of radiation is 157.6 meters above mean sea level, or 32.0 meters above ground level. The tower to be utilized is assigned 1219154 as its Antenna Structure Registration Number. A composite directional antenna consisting of two Kathrein-Scala PR-TV antennas is proposed for use. One element is to be oriented at 110 degrees true, with the other at 350 degrees true. Equal power division will be employed.

The map in Exhibit E-1 is a comparison between the licensed and proposed technical parameters, and illustrates the 51 dBu F(50,90) service contour for each set of parameters. This application proposes a relocation of the transmitter; however, the relocation distance is less than 30 miles as indicated on the map. This map also demonstrates that there is overlap between the two contours. The proposed change to the license is a minor change to the facility.

¹ The Facility ID for K22OK-D at Waco, Texas is 190132.

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Exhibit E-2 is the output from *TVStudy* for the proposed technical parameters. This study demonstrates that the proposed technical parameters would not fail interference checks to other relevant proposed and authorized facilities. This study was completed using a cell size of 1.0 km at a profile spacing of 1.0 kilometer.

The proposed facility is not located within the West Virginia quiet zone and is located at a significant distance from both the Table Mountain receiving zone, and the Commission's Kingsville Texas monitoring station. Additionally, the proposed facility would not constitute a significant environmental impact and is exempt from environmental processing. The proposed antenna would be mounted to an existing tower that is registered with the Commission. The addition of the antenna to this tower would not increase the already existing environmental impact present from the tower.

In addition, the proposed facility would not result in human exposure at ground level to radiofrequency radiation in excess of the Commission's safety standards. Using the equations in Supplement A of *OET Bulletin 65*, the calculated worst-case power density at ground level assuming a downward radiation relative field of 0.3 is $8.35 \mu\text{W}/\text{cm}^2$. This value is less than the upper limit of the uncontrolled environment condition. Southwest certifies it will coordinate with all other users of the site to ensure that workers and other personnel are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Coordination activities will include, but are not necessarily limited to, a reduction in transmitter power or cessation of operation.

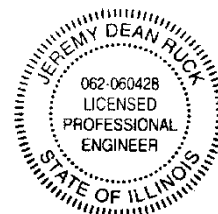
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The proposed facility complies with the provisions of Section 74.709 of the Commission's Rules. No land mobile protection issues have been identified based on the tables in that section of the rules, or on the output of *TVStudy*. The proposed facility also complies with Sections 74.793(e)-(h) and 74.793(h) of the Commission's Rules.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2021

Jeremy D. Ruck, PE
August 23, 2021

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8.23.2021

K220K-D.X

0000121629

Latitude: 31-05-13.60 N

Longitude: 096-59-02 W

ERP: 2.50 kW

Channel: 22

Frequency: 521.0 MHz

AMSL Height: 157.6 m

Horiz. Pattern: Directional

Prop Model: FCC Contour

K220K-D

0000121629

Latitude: 30-56-23.40 N

Longitude: 096-35-06.50 W

ERP: 3.20 kW

Channel: 22

Frequency: 521.0 MHz

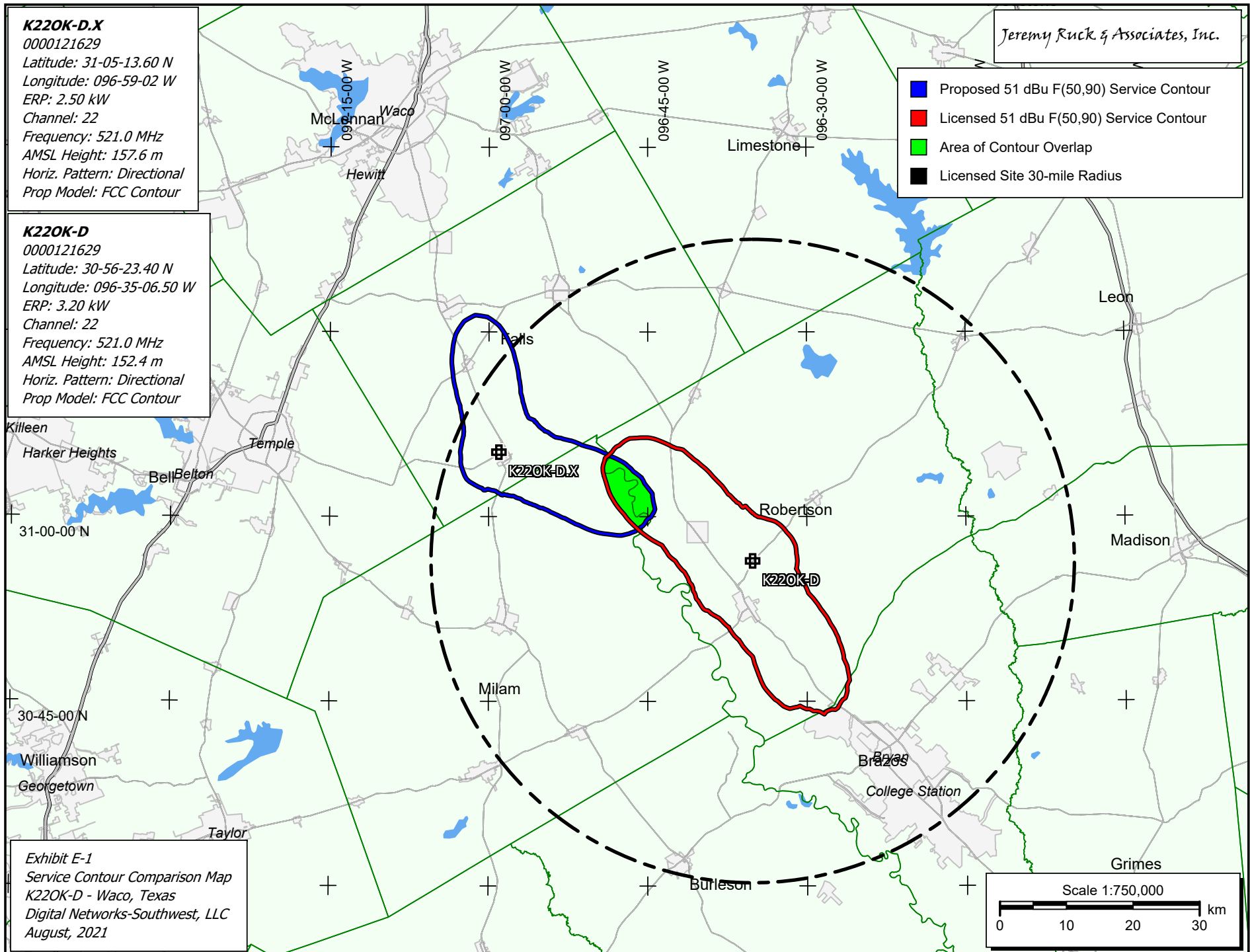
AMSL Height: 152.4 m

Horiz. Pattern: Directional

Prop Model: FCC Contour

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- Proposed 51 dBu F(50,90) Service Contour
- Licensed 51 dBu F(50,90) Service Contour
- Area of Contour Overlap
- Licensed Site 30-mile Radius

**Exhibit E-1**

Service Contour Comparison Map

K220K-D - Waco, Texas

Digital Networks-Southwest, LLC

August, 2021

Exhibit E-2 - TVStudy Interference Study

tvstudy v2.2.5 (4uoc83)

Database: 127.0.0.1, Study: K22OK CH 22 ASRN 1219154 157.6 m AMSL 2.5 kW PR-TV x2 1@110 1@350, Model: Longley-Rice
Start: 2021.08.22 17:24:34

Study created: 2021.08.22 17:24:34

Study build station data: LMS TV 2021-08-20

Proposal: K22OK-D D22 LD LIC CALVERT, TX
File number: BLANK0000121629
Facility ID: 190132
Station data: User record
Record ID: 371
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KXAN-TV	D21	DT	LIC	AUSTIN, TX	BLANK0000121393	115.0 km
No	KXAN-TV	D21	DT	CP	AUSTIN, TX	BLANK0000127602	115.0
No	KDTX-TV	D21	DT	LIC	DALLAS, TX	BLANK0000075181	167.0
No	KZJL	D21	DT	LIC	HOUSTON, TX	BLANK0000072328	220.7
No	KVQT-LD	D21	LD	LIC	HOUSTON, TX	BLDTL20100319AAW	219.9
No	KHTX-LD	D21	LD	LIC	HUNTSVILLE, TX	BLANK0000014078	150.0
No	K21KJ-D	D21	LD	LIC	MINERAL WELLS, TX	BLDTL20140612AAS	199.1
No	W22FL-D	D22	LD	CP	IOWA, LA	BLANK0000156130	380.4
No	DK22GT	N22z	TX	APP	LAKE CHARLES, LA	BLTTL20060103ABZ	353.1
No	K22NI-D	D22	LD	LIC	LEESVILLE, LA	BLANK0000064144	360.2
No	K22JQ-D	D22	LD	CP	ARDMORE, OK	BLANK0000072056	327.9
No	K22JQ-D	D22	LD	LIC	ARDMORE, OK	BLDTL20140224ACC	351.0
No	K23HY-D	D22	LD	LIC	IDABEL, OK	BLANK0000059597	372.2
No	KZAB-LP	D22-	LD	CP	ABILENE, TX	BLANK0000136000	300.5
Yes	KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	115.6
No	K22JW-D	D22	LD	LIC	BAY CITY, TX	BLDTL20140225AAS	270.1
No	KUMY-LD	D22	LD	CP	BEAUMONT, TX	BLANK0000151634	297.8
No	KUMY-LD	D22	LD	LIC	BEAUMONT, TX	BLDTL20120308ACH	297.8
No	K22JA-D	D22	DC	LIC	CORPUS CHRISTI, TX	BLANK0000117103	374.8
No	KNAV-LD	D22	LD	LIC	DALLAS, TX	BLANK0000120153	167.0
No	KNAV-LD	N22-	TX	LIC	DALLAS, TX	BLTTL20050915ABM	167.0
No	K21OR-D	D22	LD	APP	EAGLE PASS, TX	BLANK0000104166	421.2
No	KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000073375	219.9
No	KETK-TV	D22	DT	LIC	JACKSONVILLE, TX	BMLCDT20120516ABW	191.6
No	KGSW-LD	D22	LD	LIC	KEENE, TX	BLANK0000106132	150.2
No	KTXE-LD	D22	LD	LIC	SAN ANGELO, TX	BLANK0000152176	332.9
No	KISA-LD	D22	LD	LIC	SAN ANTONIO, TX	BLANK0000101032	234.1
No	K22NR-D	D22	LD	LIC	STEPHENVILLE, TX	BLANK0000074737	181.9
No	KAUZ-TV	D22	DT	LIC	WICHITA FALLS, TX	BLCDT20090724ACR	345.1
No	KNVA	D23	DT	LIC	AUSTIN, TX	BLANK0000121388	115.0
No	KAGS-LD	D23	LD	LIC	BRYAN, TX	BLDTL20101026AAZ	69.3
No	KLTJ	D23	DT	LIC	GALVESTON, TX	BLEDT20110127ACD	219.9
No	KTXD-TV	D23	DT	LIC	GREENVILLE, TX	BLANK0000080284	167.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D22
Mask: Full Service
Latitude: 31 5 13.60 N (NAD83)
Longitude: 96 59 2.00 W
Height AMSL: 157.6 m
HAAT: 27.2 m
Peak ERP: 2.50 kW
Antenna: SCA PR-TV x2 Array 1@110 1@350 0.0 deg

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Exhibit E-2 - TVStudy Interference Study

Elev Pattn: Generic

49.6 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1.66 kW	19.4 m	20.7 km
45.0	0.026	32.7	7.6
90.0	0.518	37.0	17.0
135.0	0.212	46.6	15.0
180.0	0.013	35.1	6.7
225.0	0.018	22.8	6.8
270.0	0.014	6.9	6.3
315.0	0.050	17.4	8.7

Distance to Canadian border: 1722.4 km

Distance to Mexican border: 418.0 km

Conditions at FCC monitoring station: Kingsville TX
Bearing: 192.4 degrees Distance: 414.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 325.8 degrees Distance: 1248.6 km

Study cell size: 1.00 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%

----- Interference to BLEDT20040305ACK LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	
Undesireds:	K22OK-D	D22	LD	LIC	CALVERT, TX	BLANK0000121629	115.6 km
	KXAN-TV	D21	DT	LIC	AUSTIN, TX	BLANK0000121393	0.6
	K22JA-D	D22	DC	LIC	CORPUS CHRISTI, TX	BLANK0000117103	285.5
	KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000073375	236.1
	KETK-TV	D22	DT	LIC	JACKSONVILLE, TX	BMLCDT20120516ABW	305.6
	KNVA	D23	DT	LIC	AUSTIN, TX	BLANK0000121388	0.6

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	33715.5	2,616,817	32939.7	2,584,581	31828.3	2,553,889	0.05 0.00

Undesired	Total IX		Unique IX, before		Unique IX, after		
K22OK-D D22 LD LIC	42.9	133	17.3	25			
KXAN-TV D21 DT LIC	62.3	2,330	1.0	0	1.0	0	
K22JA-D D22 DC LIC	5.0	1,734	1.0	1,734	1.0	1,734	
KTMD D22 DT LIC	1032.0	26,906	967.6	25,967	953.3	25,892	
KETK-TV D22 DT LIC	66.5	1,140	13.1	205	10.1	205	
KNVA D23 DT LIC	75.4	2,389	13.1	55	13.1	55	

----- Interference to BLEDT20040305ACK LIC scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	
Undesireds:	K22OK-D	D22	LD	LIC	CALVERT, TX	BLANK0000121629	115.6 km
	KXAN-TV	D21	DT	CP	AUSTIN, TX	BLANK0000127602	0.6
	K22JA-D	D22	DC	LIC	CORPUS CHRISTI, TX	BLANK0000117103	285.5
	KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000073375	236.1
	KETK-TV	D22	DT	LIC	JACKSONVILLE, TX	BMLCDT20120516ABW	305.6
	KNVA	D23	DT	LIC	AUSTIN, TX	BLANK0000121388	0.6

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Exhibit E-2 - TVStudy Interference Study

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
33715.5 2,616,817	32939.7 2,584,581	31800.2 2,552,967	31782.9 2,552,942	0.05 0.00
Undesired	Total IX	Unique IX, before	Unique IX, after	
K22OK-D D22 LD LIC	42.9 133		17.3 25	
KXAN-TV D21 DT CP	108.5 3,830	29.1 922	29.1 922	
K22JA-D D22 DC LIC	5.0 1,734	1.0 1,734	1.0 1,734	
KTMD D22 DT LIC	1032.0 26,906	964.6 25,448	951.3 25,382	
KETK-TV D22 DT LIC	66.5 1,140	12.1 205	10.1 205	
KNVA D23 DT LIC	75.4 2,389	0.0 0	0.0 0	

Interference to proposal scenario 1
4.99% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	K22OK-D	D22	LD	LIC	CALVERT, TX	BLANK0000121629	
Undesireds:	KLRU	D22	DT	LIC	AUSTIN, TX	BLEDT20040305ACK	115.6 km
	KUMY-LD	D22	LD	CP	BEAUMONT, TX	BLANK0000151634	297.8
	KNAV-LD	D22	LD	LIC	DALLAS, TX	BLANK0000120153	167.0
	KTMD	D22	DT	LIC	GALVESTON, TX	BLANK0000073375	219.9

Service area	Terrain-limited	IX-free	Percent IX
525.7 3,609	524.6 3,609	464.6 3,429	11.45 4.99
Undesired	Total IX	Unique IX	Prcnt Unique IX
KLRU D22 DT LIC	57.0 180	56.0 162	10.68 4.49
KTMD D22 DT LIC	4.1 18	3.1 0	0.58 0.00

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