

ENGINEERING EXHIBIT

Displacement Application of Digital Low Power Television Station Construction Permit

prepared for

SagamoreHill Lake Charles, LLC

W24DX-D Iowa, LA

Facility ID 185545

Ch. 30 6 kW Directional

SagamoreHill Lake Charles, LLC (“*SagamoreHill*”) is the permittee of unbuilt digital Low Power Television station W24DX-D, Channel 24, Facility ID 185545, Iowa LA. W24DX-D is currently authorized to operate pursuant to a Construction Permit (“CP”, file# BNPDTL-20100407ABU) with 1 kW effective radiated power (“ERP”), nondirectional. The authorized Channel 24 facility is displaced by a Class A television station that was reassigned to a new channel. *SagamoreHill* herein seeks a displacement CP to change to Channel 30 and use of a different transmitting location.

The existing Channel 24 CP is displaced due to interference caused to and received from KFAM-CD, Facility ID 59500, Lake Charles LA. KFAM-CD was reassigned to Channel 24 at the incentive auction¹ and is now licensed on Channel 24 at a site located 35.3 km from W24DX-D. Table 1 supplies a summary of the interference caused to and received from KFAM-CD, showing that W24DX-D would cause 4.42 percent interference to KFAM-CD and experience 84.81 percent interference from KFAM-CD.

As proposed herein, the proposed Channel 30 facility will utilize an existing antenna support structure located 41.2 km (25.6 miles) from the authorized W24DX-D site. The site is located more than 75 miles (121 km) from the reference coordinates of the markets listed in Appendix A of DA 09-1487².

¹*Incentive Auction Closing and Channel Reassignment Public Notice*, DA 17-317, released April 13, 2017.

²“*Commencement of Rural, First-come, First-served digital licensing for Low Power Television and TV Translators Beginning August 25, 2009 and Commencement of Nationwide, First-come, First-served Digital Licensing for Low Power Television and TV Translator Services Beginning January 25, 2010*,” Public Notice, DA

The proposed W24DX-D facility will employ a directional antenna system to be side-mounted on a structure having an overall height above ground of 12.2 meters. The structure does not require an FCC Antenna Structure Registration number since its overall height is less than 61 meters above ground and the structure passes the FCC's "TOWAIR" slope test program.

The proposed W24DX-D facility will operate with a directional antenna at 6 kW ERP using a "full service" out of channel emission mask. A plot of the directional antenna's azimuthal pattern is supplied in Figure 1. Figure 2 depicts the 51 dB μ coverage contour of the proposed Channel 30 facility as well as that of the presently authorized Channel 24 facility, demonstrating compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69³ shows that the proposal complies with the FCC's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in Table 2, show that any new interference does not exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed W24DX-D facility was evaluated for human exposure to Radiofrequency ("RF") energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10), and considering the antenna relative field in downward elevations, the graph in Figure 3 depicts calculated power density levels attributable to the proposed facility at locations near the site at a height of two meters above ground level. The maximum calculated RF electromagnetic field attributable to the proposed facility is 39.5 percent of the general population / uncontrolled maximum permissible exposure limit at any location two meters above ground level,

09-1487, Released June 29, 2009.

³FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 1 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

which occurs within 5 meters of the proposed site location. No other television or radio broadcast facilities are authorized within sufficient distance to be a significant contributor to RF exposure at this location.

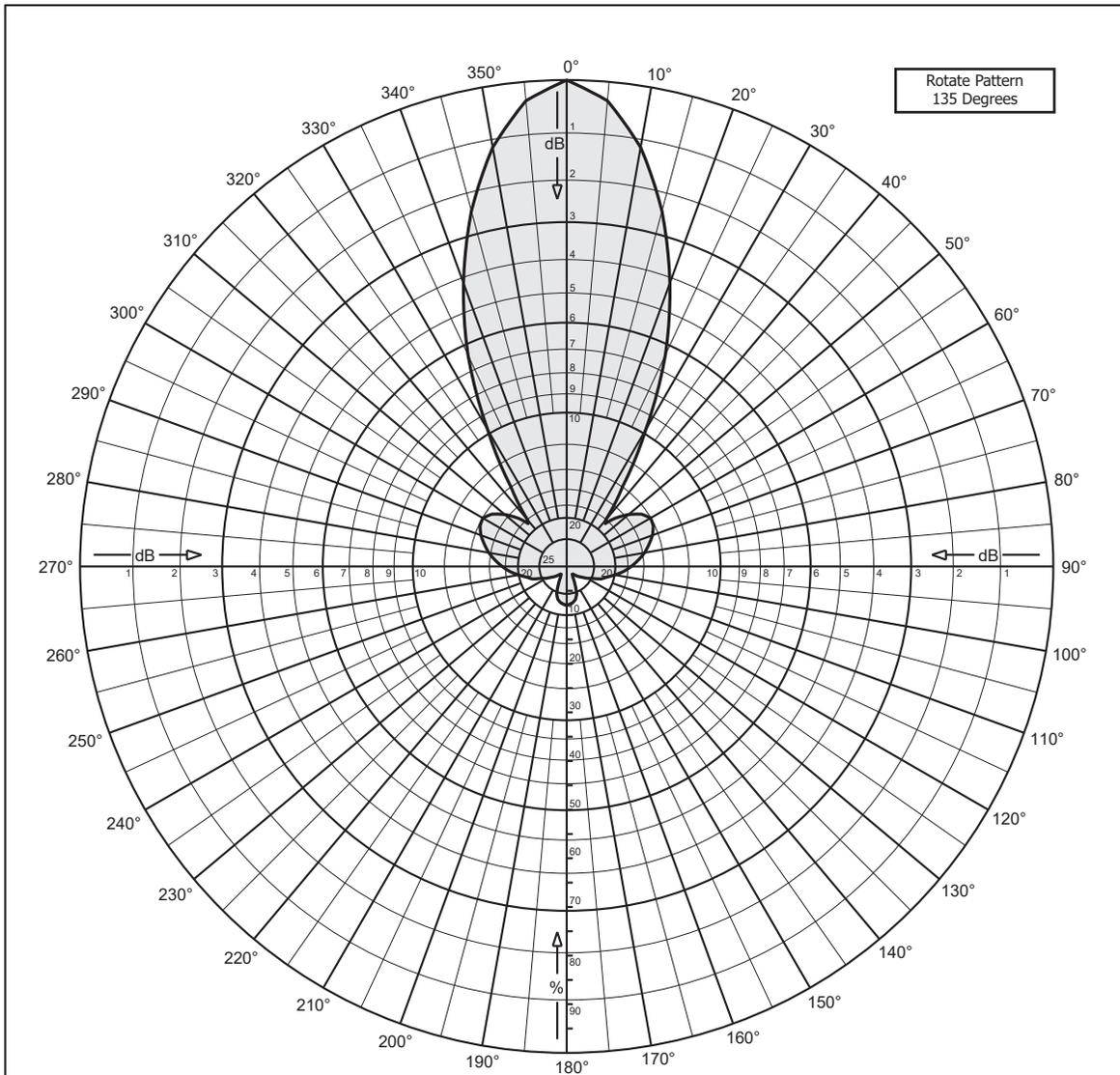
The general public will not be exposed to RF levels in excess of the FCC's guidelines. The W24DX-D facility will reduce power or cease operation as necessary to protect persons having access to the supporting structure or antenna from RF electromagnetic field exposure in excess of FCC guidelines. Environmental matters covered by this exhibit are limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Figure 3	Calculated RF Electromagnetic Field
Table 1	Ch. 24 TVStudy Displacement Summary
Table 2	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E. June 9, 2021
207 Old Dominion Road Yorktown, VA 23692 703-650-9600



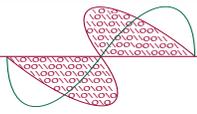
4DR-4-2HN
 Ch-30
 Maximum gain: 12.0 dBd
 Horizontal polarization
 Horizontal plane pattern



Figure 1
Antenna Azimuthal Pattern
W24DX-D Iowa, LA
Facility ID 185545
Ch. 30 6 kW Directional

prepared for
SagamoreHill Lake Charles, LLC

June, 2021



Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 2
Coverage Contour Comparison
W24DX-D Iowa, LA
Facility ID 185545
Ch. 30 6 kW Directional

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June, 2021

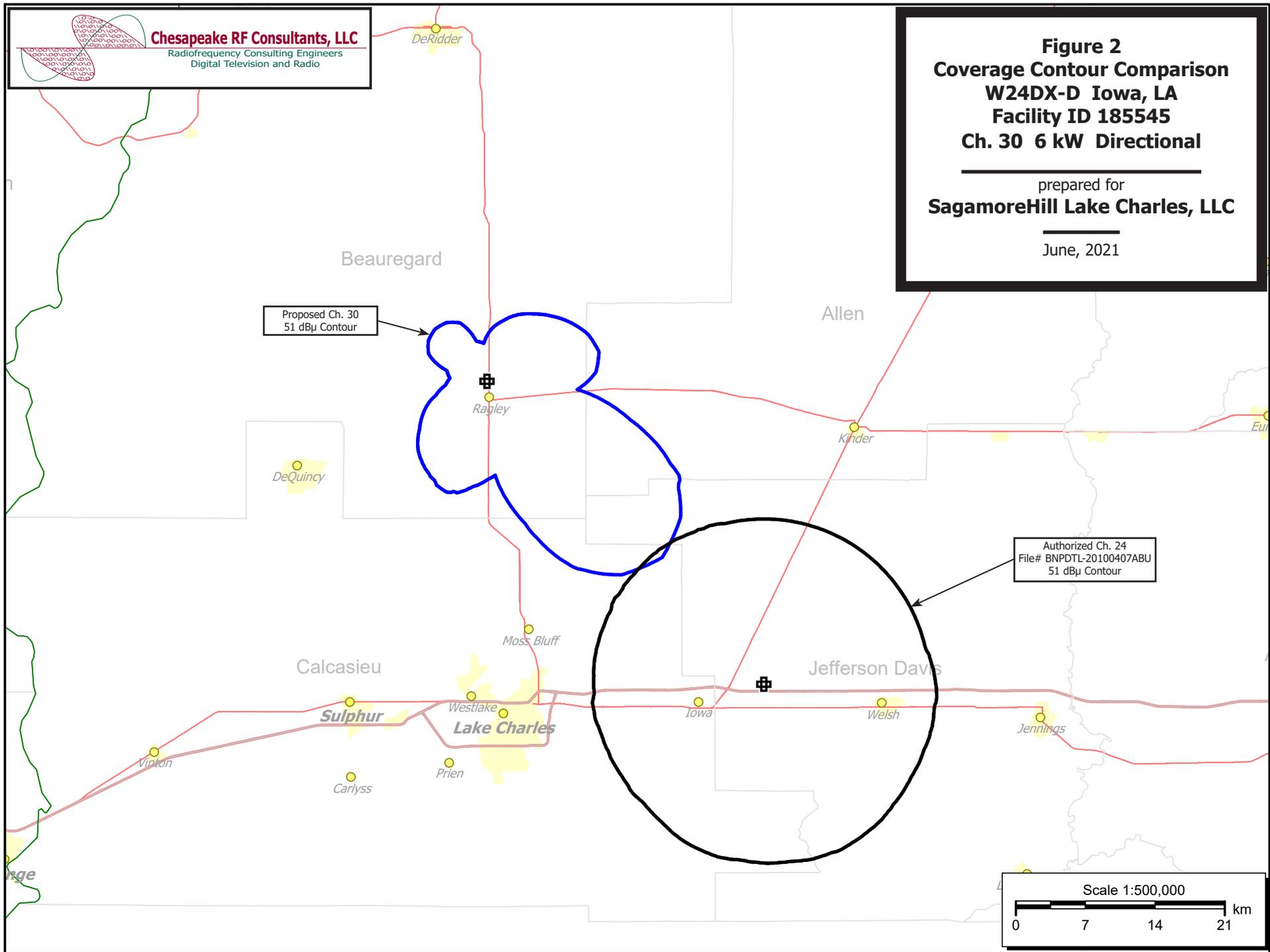
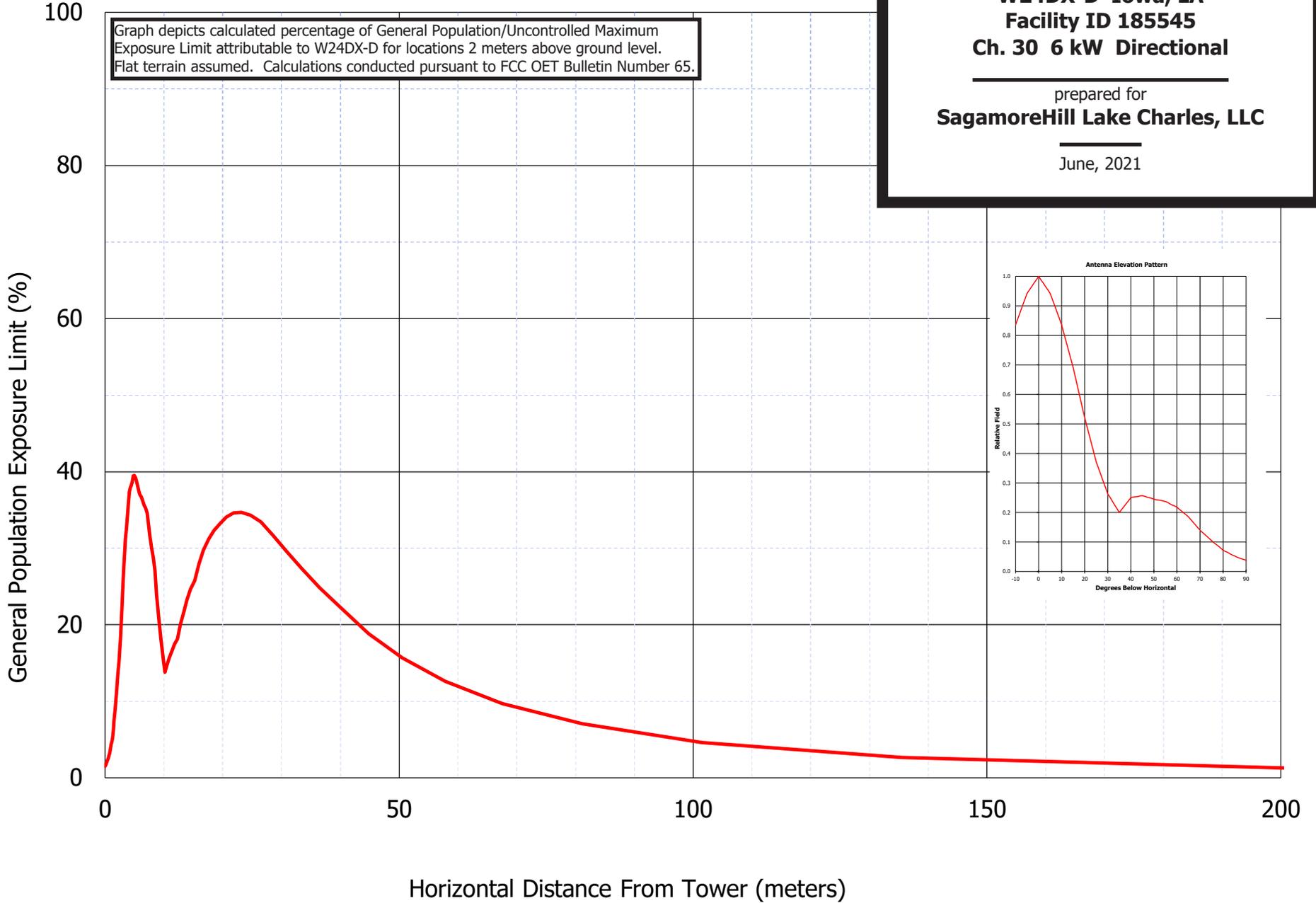


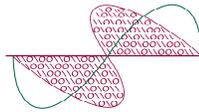
Figure 3
Calculated RF Electromagnetic Field
W24DX-D Iowa, LA
Facility ID 185545
Ch. 30 6 kW Directional

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Graph depicts calculated percentage of General Population/Uncontrolled Maximum Exposure Limit attributable to W24DX-D for locations 2 meters above ground level. Flat terrain assumed. Calculations conducted pursuant to FCC OET Bulletin Number 65.





Interference caused to KFAM-CD Repack Ch. 24 Lake Charles LA

Interference to BLANK0000063954 LIC scenario 1

****IX: 4.42% interference caused**

Desired:	Call KFAM-CD	Chan D24	Svc DC	Status LIC	City, State LAKE CHARLES, LA	File Number BLANK0000063954	Distance
Undesireds:	W24DX-D	D24	LD	CP	IOWA, LA	BNPDTL20100407ABU	35.3 km
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	7160.0	248,050	7160.0	248,050	7160.0	248,050	6505.0 237,095 9.15 4.42
Undesired				Total IX	Unique IX, before	Unique IX, after	
W24DX-D	D24	LD	CP	654.9	10,955	654.9	10,955

Interference received from KFAM-CD Repack Ch. 24 Lake Charles LA

Interference to proposal scenario 1

81.81% interference received

Desired:	Call W24DX-D	Chan D24	Svc LD	Status CP	City, State IOWA, LA	File Number BNPDTL20100407ABU	Distance
Undesireds:	KFAM-CD	D24	DC	LIC	LAKE CHARLES, LA	BLANK0000063954	35.3 km
	Service area		Terrain-limited		IX-free	Percent IX	
	1089.5	22,211	1089.5	22,211	212.3	4,041	80.51 81.81
Undesired				Total IX	Unique IX	Prct Unique IX	
KFAM-CD	D24	DC	LIC	877.2	18,170	877.2	18,170 80.51 81.81

Table 2 K24DX-D TVStudy Analysis of Proposal
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tvstudy v2.2.5 (4uoc83)
 Database: localhost, Study: W24DX-D 30_Ragley, Model: Longley-Rice
 Start: 2021.06.09 08:24:19

Study created: 2021.06.09 08:24:18

Study build station data: LMS TV 2021-06-08

Proposal: W24DX-D D30 LD APP Iowa, LA
 File number: W24DX-D 30_Ragley
 Facility ID: 185545
 Station data: User record
 Record ID: 3708
 Country: U.S.

Build options:
 Protect pre-transition records not on baseline channel

Search options:
 Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K22GT	N22z	TX	LIC	LAKE CHARLES, LA	BLTTL20060103ABZ	52.9 km
No	K44LC-D	D29	LD	CP	ALEXANDRIA, LA	BLANK0000072038	71.8
No	K29LR-D	D29	LD	LIC	BATON ROUGE, LA	BLANK0000103483	189.0
No	W29EB-D	D29	LD	CP	SULPHUR, LA	BNPDTL20100407ABJ	40.1
No	KITU-TV	D29	DT	LIC	BEAUMONT, TX	BLANK0000063643	75.3
No	KEHO-LD	D29	LD	LIC	HOUSTON, TX	BLANK0000072198	208.4
No	KHTX-LD	D29	LD	CP	HUNTSVILLE, TX	BLANK0000052730	215.3
No	KCTL-LD	D29	LD	CP	LIVINGSTON, TX	BLANK0000051766	182.4
No	KFXL-LD	D29	LD	LIC	LUFKIN, TX	BLDTL20121127ADL	173.3
No	K30NH-D	D30	LD	CP	EL DORADO, AR	BNPDTL20101020AAQ	309.1
No	K30QG-D	D30	LD	LIC	ALEXANDRIA, LA	BLANK0000086776	111.9
No	WLFT-CD	D30	DC	LIC	BATON ROUGE, LA	BLDTA20110912ACB	209.5
No	KFOL-CD	D30	DC	LIC	HOUMA, LA	BLDTA20100111AGW	264.8
No	KXKW-LD	D30	LD	CP	LAFAYETTE, LA	BLANK0000053054	123.6
No	K21OZ-D	N30-	TX	LIC	SHREVEPORT, LA	BLTTL19950412IB	332.5
No	K30QB-D	D30	LD	LIC	SHREVEPORT, LA	BLANK0000068681	224.3
No	W39DX-D	D30	LD	CP	VINTON, LA	BLANK0000071870	54.2
No	WLBT	D30	DT	LIC	JACKSON, MS	BLCDT20100119AEE	329.3
No	W30CC	N30z	TX	LIC	NATCHEZ, MS	BLTTL20060103ABY	211.5
No	KXTP-LD	D30	LD	CP	BEAUMONT, TX	BLANK0000072040	98.1
No	K30QR-D	D30	LD	CP	BRYAN, TX	BNPDTL20090825BQB	301.8
No	KMPX	D30	DT	LIC	DECATUR, TX	BLCDT20060317AGE	421.4
No	KCVH-LD	D30	LD	LIC	HOUSTON, TX	BLDTL20130513ABR	243.7
No	KHTX-LP	N30-	TX	LIC	HUNTSVILLE, TX	BLTTL19980813JD	215.3
No	KXLN-DT	D30	DT	LIC	ROSENBERG, TX	BLANK0000067755	243.7
No	KKPD-LD	D30	LD	LIC	TYLER, TX	BLANK0000081311	279.4
No	KVHM-LP	D30	LD	CP	VICTORIA, TX	BLANK0000001270	416.4
No	KLAX-TV	D31	DT	LIC	ALEXANDRIA, LA	BLCDT20090622AGN	132.6
No	W48DW-D	D31	LD	CP	BATON ROUGE, LA	BLANK0000129698	205.7
No	KAGN-CD	D31	DC	LIC	CROWLEY, LA	BLANK0000001651	85.2
No	W31DQ-D	D31	LD	CP	LAKE CHARLES, LA	BNPDTL20100407ABN	30.7
No	W31EA-D	D31	LD	CP	VINTON, LA	BNPDTL20100407AAU	54.2
No	KUBE-TV	D31	DT	LIC	BAYTOWN, TX	BLANK0000072353	243.4
No	K34LK-D	D31	LD	APP	BEAUMONT, TX	BLANK0000139375	83.4

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D30
 Mask: Full Service
 Latitude: 30 31 36.70 N (NAD83)
 Longitude: 93 14 4.70 W
 Height AMSL: 40.4 m (Adjusted based on actual ground elevation calculation)
 HAAT: 0.0 m
 Peak ERP: 6.00 kW
 Antenna: SCA-4DR-4-2HN (ID 20740) 135.0 deg

Table 2 K24DX-D TVStudy Analysis of Proposal
 (page 2 of 2)



Elev Pattrn: Generic

50.3 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.006 kW	5.8 m	4.8 km
45.0	0.094	10.9	9.7
90.0	0.132	20.3	10.5
135.0	6.00	20.8	25.8
180.0	0.122	24.1	10.3
225.0	0.118	23.4	10.2
270.0	0.003	16.3	4.2
315.0	0.038	4.9	7.8

Database HAAT does not agree with computed HAAT
 Database HAAT: 0 m Computed HAAT: 16 m

Distance to Canadian border: 1552.9 km

Distance to Mexican border: 621.5 km

Conditions at FCC monitoring station: Kingsville TX
 Bearing: 234.0 degrees Distance: 567.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 317.8 degrees Distance: 1520.1 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 proposal scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	W24DX-D	D30	LD	APP	Iowa, LA	W24DX-D 30_Ragley	
	Service area		Terrain-limited			IX-free	Percent IX
	477.6	6,114	477.6	6,114	477.6	6,114	0.00 0.00

Channel and Facility Information

Section	Question	Response
Facility ID	185545	
State	Louisiana	
City	IOWA	
LPD Channel	30	

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	No
	ASR Number	
Coordinates (NAD83)	Latitude	30° 31' 36.7" N+
	Longitude	093° 14' 04.7" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	12.2 meters
	Support Structure Height	12.2 meters
	Ground Elevation (AMSL)	30.5 meters
Antenna Data	Height of Radiation Center Above Ground Level	9.1 meters
	Height of Radiation Center Above Mean Sea Level	39.6 meters
	Effective Radiated Power	6 kW

**Antenna
Technical Data**

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	Yes
	Antenna ID	20740
Antenna Manufacturer and Model	Manufacturer:	SCA
	Model	4DR-4-2HN
	Rotation	135 degrees
	Electrical Beam Tilt	Not Applicable
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Horizontal
Elevation Radiation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	
	Out-of-Channel Emission Mask:	Full Service

Directional Antenna Relative Field Values (Pre-rotated Pattern)

Degree	Value	Degree	Value	Degree	Value	Degree	Value
0	1	90	0.14	180	0.08	270	0.125
10	0.87	100	0.1	190	0.075	280	0.155
20	0.615	110	0.07	200	0.06	290	0.185
30	0.32	120	0.04	210	0.025	300	0.2
40	0.13	130	0.025	220	0.021	310	0.177
50	0.155	140	0.02	230	0.04	320	0.12
60	0.198	150	0.025	240	0.057	330	0.33
70	0.19	160	0.06	250	0.08	340	0.625
80	0.17	170	0.075	260	0.1	350	0.88

Additional Azimuths

Degree	V _A
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