

## **ENGINEERING EXHIBIT**

### **Application for Minor Modification of Digital Low Power Television Station Construction Permit**

prepared for

#### **SagamoreHill of Kansas City Licenses, LLC**

K33QK-D Port Arthur, TX

Facility ID 182045

Ch. 33 15 kW Nondirectional

*SagamoreHill of Kansas City Licenses, LLC* (“*SagamoreHill*”) is the permittee of unbuilt digital Low Power Television station K33QK-D, Channel 33, Port Arthur TX, Facility ID 182045. K33QK-D is authorized to operate pursuant to a Construction Permit (“CP”, file# 0000074358) with 15 kW effective radiated power (“ERP”), nondirectional. The current CP was obtained as a displacement of the previously authorized operation on Channel 18 (callsign K18JK-D). *SagamoreHill* herein seeks a modification of the current CP to specify a different transmitting location for the Channel 33 facility.

The proposed facility will employ a new antenna system to be side-mounted on the existing tower structure associated with FCC Antenna Structure Registration number 1049415, located 10.5 km (6.5 miles) from the current CP site. The proposed site is the same location that was originally authorized for K18JK-D (file# BNPDTL-20090825AXV). The site is located more than 75 miles (121 km) from the reference coordinates of the markets listed in Appendix A of DA 09-1487<sup>1</sup>. No change to the overall structure height is proposed.

The proposed antenna is an ERI model AL12O-33-PL. The proposed ERP is 15 kW nondirectional using a “full service” out of channel emission mask. Figure 1 depicts the 51 dBμ coverage contour of the proposed facility as well as that of the current and original CP facilities, demonstrating compliance with §73.3572 for a minor change.

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<sup>1</sup>“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 09-1487, Released June 29, 2009.

Interference study per OET Bulletin 69<sup>2</sup> 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 1, 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.

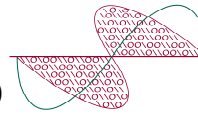
### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposed facility was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10) and 15 percent antenna relative field in downward elevations (pattern data shows 15 percent or less relative field at angles 20 to 90 degrees below the antenna), the calculated power density attributable to the proposed facility at locations near the transmitter site at a height of two meters above ground level is  $0.7 \mu\text{W}/\text{cm}^2$ , which is 0.2 percent of the general population / uncontrolled maximum permissible exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines. This exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

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<sup>2</sup>FCC 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.

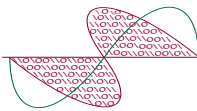


List of Attachments

Figure 1	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections of FCC Form at Time of Upload

**Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.	June 17, 2021	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

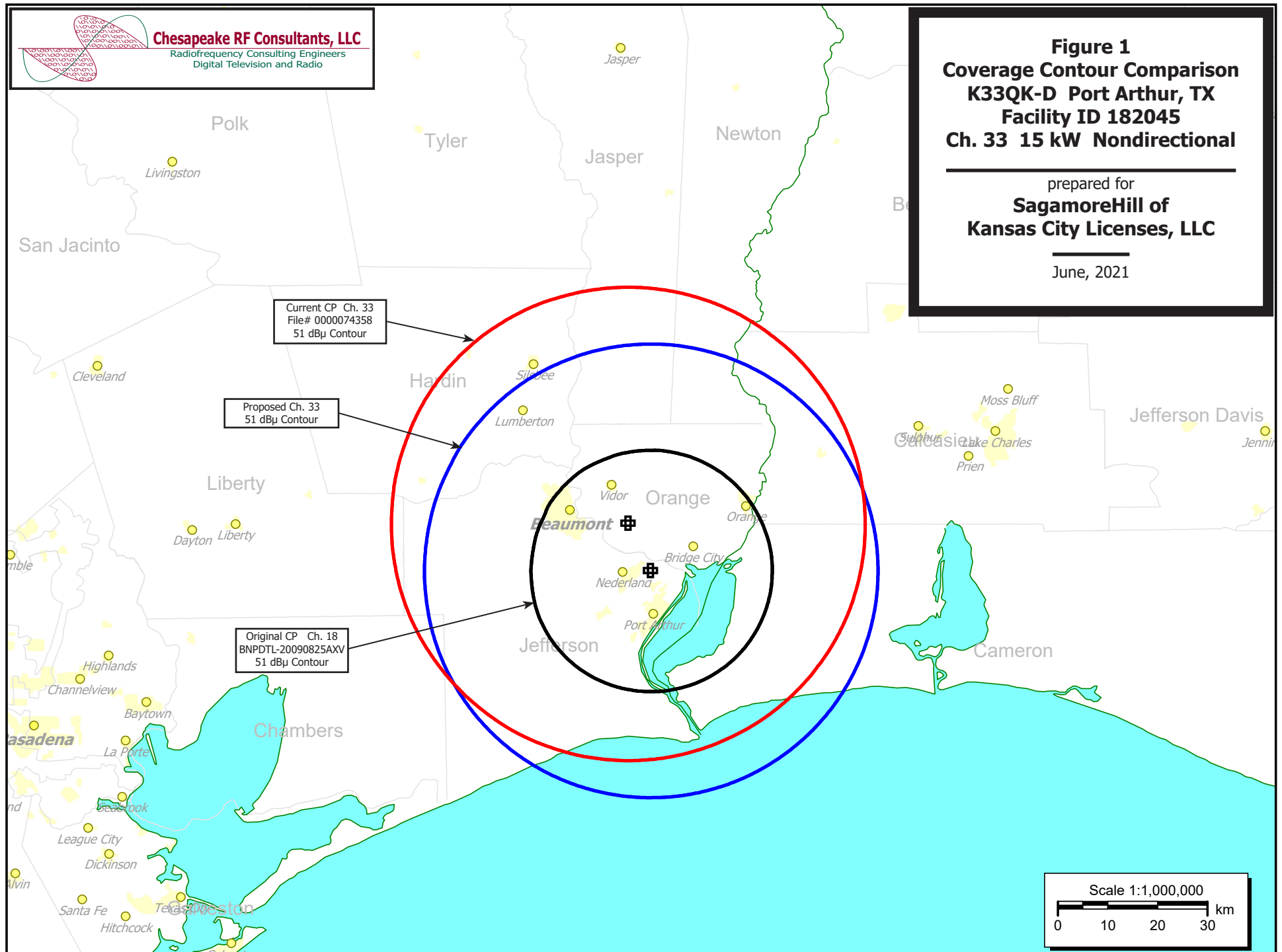


**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

**Figure 1**  
**Coverage Contour Comparison**  
**K33QK-D Port Arthur, TX**  
**Facility ID 182045**  
**Ch. 33 15 kW Nondirectional**

prepared for  
**SagamoreHill of**  
**Kansas City Licenses, LLC**

June, 2021



# **Table 1 K33QK-D TVStudy Analysis of Proposal** (page 1 of 3)



tvstudy v2.2.5 (4uoc83)  
Database: localhost, Study: K33QK-D ASR1049415\_425ft, Model: Longley-Rice  
Start: 2021.06.17 14:40:48

Study created: 2021.06.17 14:40:48

Study build station data: LMS TV 2021-06-17

Proposal: K33QK-D D33 LD APP PORT ARTHUR, TX  
File number: K33QK-D ASR1049415 425ft  
Facility ID: 182045  
Station data: User record  
Record ID: 3637  
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	W32EC-D	D32	LD	CP	IOWA, LA	BNPDTL20100407ABY	99.9 km
No	KXKW-LD	D32	LD	CP	LAFAYETTE, LA	BPDTL20110830ABR	193.8
No	W32EB-D	D32	LD	CP	SULPHUR, LA	BNPDTL20100407AAZ	53.1
No	KAOB-LD	D32	LD	CP	BEAUMONT, TX	BLANK00000125190	17.4
No	K40KX-D	D32	LD	CP	CENTERVILLE, TX	BLANK0000054554	218.2
No	KPXB-TV	D32	DT	LIC	CONROE, TX	BLANK00000124635	158.1
No	KLNM-LD	D32	LD	LIC	LUFKIN, TX	BLANK00000139943	166.5
No	K32KD-D	D32	LD	CP	WOODVILLE, TX	BNPDTL20100310AAS	99.5
No	K33QJ-D	D33	LD	CP	TEXARKANA, AR	BLANK0000072734	401.2
Yes	KLPA-TV	D33	DT	LIC	ALEXANDRIA, LA	BLANK0000063603	220.8
No	K33MS-D	D33	LD	CP	MONROE, LA	BLANK0000036216	327.6
No	WPXL-TV	D33	DT	LIC	NEW ORLEANS, LA	BLANK00000105390	383.6
No	KVUE	D33	DT	LIC	AUSTIN, TX	BLCDT20050624AAI	373.9
Yes	KTBU	D33	DT	LIC	CONROE, TX	BLANK0000072275	158.8
No	KUVN-DT	D33	DT	LIC	GARLAND, TX	BLANK0000074930	409.2
No	KQZY-LP	D33	LD	LIC	VICTORIA, TX	BLANK00000111637	333.6
No	WVLA-TV	D34	DT	LIC	BATON ROUGE, LA	BLCDT20051221AOO	258.3
No	KSWL-LD	D34	LD	LIC	LAKE CHARLES, LA	BLANK0000067198	65.8
Yes	K34LK-D	D34	LD	CP	BEAUMONT, TX	BNPDTL20090826ACT	18.7
No	KIAH	D34	DT	LIC	HOUSTON, TX	BLANK0000071734	157.7
No	KVHP-LD	D34	LD	CP	JASPER, TX	BLANK0000054529	111.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D33  
Mask: Full Service  
Latitude: 29 58 36.00 N (NAD83)  
Longitude: 93 56 3.00 W  
Height AMSL: 132.5 m  
HAAT: 0.0 m  
Peak ERP: 15.0 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 1.25

50.6 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	15.0 kW	129.3 m	45.8 km
45.0	15.0	130.3	45.8
90.0	15.0	131.7	45.9
135.0	15.0	131.7	45.9
180.0	15.0	130.7	45.9
225.0	15.0	130.9	45.9
270.0	15.0	128.4	45.7
315.0	15.0	130.7	45.9

**Table 1 K33QK-D TVStudy Analysis of Proposal**  
(page 2 of 3)



Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 130 m

Distance to Canadian border: 1640.8 km

Distance to Mexican border: 532.8 km

Conditions at FCC monitoring station: Kingsville TX  
Bearing: 234.8 degrees Distance: 477.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 320.8 degrees Distance: 1522.6 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%

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Interference to BLANK0000063603 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KLPA-TV	D33	DT	LIC	ALEXANDRIA, LA	BLANK0000063603	
Undesireds:	K33QK-D	D33	LD	APP	PORT ARTHUR, TX	K33QK-D ASR1049415 425	220.8 km
	KTBU	D33	DT	LIC	CONROE, TX	BLANK0000072275	360.5
	KMSS-TV	D34	DT	LIC	SHREVEPORT, LA	BLCDT20050705AAB	178.8
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
28481.6		414,441		28423.6		413,752	0.00 0.00
				414,212		413,752	
Undesired			Total IX		Unique IX, before		Unique IX, after
K33QK-D D33 LD APP			13.2		30		1.0 0
KTBU D33 DT LIC			60.0		460		47.8 430
KMSS-TV D34 DT LIC			1.0		0		1.0 0

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Interference to BLANK0000072275 LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KTBU	D33	DT	LIC	CONROE, TX	BLANK0000072275	
Undesireds:	K33QK-D	D33	LD	APP	PORT ARTHUR, TX	K33QK-D ASR1049415 425	158.8 km
	KPXB-TV	D32	DT	LIC	CONROE, TX	BLANK0000124635	0.9
	KLPA-TV	D33	DT	LIC	ALEXANDRIA, LA	BLANK0000063603	360.5
	KVUE	D33	DT	LIC	AUSTIN, TX	BLCDT20050624AAI	236.5
	KUVN-DT	D33	DT	LIC	GARLAND, TX	BLANK0000074930	364.0
	KIAH	D34	DT	LIC	HOUSTON, TX	BLANK0000071734	1.2
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
37095.6		6,035,271		37025.6		5,989,727	2.62 0.15
				6,035,137		5,989,727	
Undesired			Total IX		Unique IX, before		Unique IX, after
K33QK-D D33 LD APP			904.6		9,433		898.6 9,294
KPXB-TV D32 DT LIC			10.0		920		1.0 0
KLPA-TV D33 DT LIC			5.0		139		0.0 0
KVUE D33 DT LIC			697.3		11,312		665.3 11,167
KUVN-DT D33 DT LIC			24.0		279		0.0 0
KIAH D34 DT LIC			2008.4		24,669		1996.4 23,749

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Interference to BNPDTL20090826ACT CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K34LK-D	D34	LD	CP	BEAUMONT, TX	BNPDTL20090826ACT	
Undesireds:	K33QK-D	D33	LD	APP	PORT ARTHUR, TX	K33QK-D ASR1049415 425	18.7 km

**Table 1 K33QK-D TVStudy Analysis of Proposal**  
(page 3 of 3)



WVLA-TV	D34	DT	LIC	BATON ROUGE, LA	BLCDT20051221AOO	260.3
KSWL-LD	D34	LD	LIC	LAKE CHARLES, LA	BLANK0000067198	64.8
KMSS-TV	D34	DT	LIC	SHREVEPORT, LA	BLCDT20050705AAB	280.8
KIAH	D34	DT	LIC	HOUSTON, TX	BLANK0000071734	159.7
KVHP-LD	D34	LD	CP	JASPER, TX	BLANK0000054529	92.8
K35PF-D	D35	LD	CP	BEAUMONT, TX	BLANK0000081611	5.8

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
33.1	6,841	32.1	6,270	17.0	2,478	16.0	2,478	5.88	0.00
Undesired		Total IX		Unique IX, before		Unique IX, after			
K33QK-D	D33 LD APP	5.0	1,924			1.0	0		
WVLA-TV	D34 DT LIC	1.0	512	0.0	0	0.0	0		
KSWL-LD	D34 LD LIC	6.0	3,099	0.0	0	0.0	0		
KMSS-TV	D34 DT LIC	1.0	11	0.0	0	0.0	0		
KIAH	D34 DT LIC	6.0	2,325	0.0	0	0.0	0		
KVHP-LD	D34 LD CP	7.0	2,809	1.0	219	1.0	219		
K35PF-D	D35 LD CP	14.0	3,573	6.0	209	6.0	209		

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Interference to proposal scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance
Desired: K33QK-D	D33	LD	APP	PORT ARTHUR, TX	K33QK-D ASR1049415	425
Undesireds: KTBU	D33	DT	LIC	CONROE, TX	BLANK0000072275	158.8 km
Service area		Terrain-limited		IX-free	Percent IX	
6607.3	372,166	6607.3	372,166	6263.5	368,735	5.20 0.92
Undesired		Total IX		Unique IX	Prct Unique IX	
KTBU	D33 DT LIC	343.8	3,431	343.8	3,431	5.20 0.92

**Channel and Facility Information**

Section	Question	Response
Facility ID	182045	
State	Texas	
City	PORT ARTHUR	
LPD Channel	33	

**Antenna Location Data**

Section	Question	Response
<b>Antenna Structure Registration</b>	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1049415
<b>Coordinates (NAD83)</b>	Latitude	29° 58' 36.0" N+
	Longitude	093° 56' 03.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	152.4 meters
	Support Structure Height	146.0 meters
	Ground Elevation (AMSL)	3.0 meters
<b>Antenna Data</b>	Height of Radiation Center Above Ground Level	129.5 meters
	Height of Radiation Center Above Mean Sea Level	132.5 meters
	Effective Radiated Power	15 kW



**Antenna  
Technical Data**

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	ERI
	Model	AL12O-33-PL
	Rotation	
	Electrical Beam Tilt	1.25
	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

**Construction  
Permit  
Certifications**

Section	Question	Response
<b>Post-Incentive Auction Expedited Processing</b>	It will operate on the DTV channel for this station as established in the post-incentive auction channel reassignment public notice.	
	It will operate post-incentive auction facilities that do not expand the noise-limited service contour in any direction beyond that established by the post-incentive auction channel reassignment public notice.	
	It will operate post-incentive auction facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the post-incentive auction channel reassignment public notice.	
	The antenna structure to be used by this facility has been registered by the Commission and will not require re-registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely affect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	
<b>Environmental Effect</b>	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See 47 C.F.R. Section 1.1306)	No
<b>Broadcast Facility</b>	The proposed facility complies with all of the following applicable rule sections. 47 C.F.R. Sections 74.709, 74.793 (e), 74.793(f), 74.793(g), 74.793(h)	Yes