

## **ENGINEERING EXHIBIT**

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

prepared for

#### **Broadcasting Licenses, L.P.**

K32LQ-D Yreka, CA

Facility ID 130086

Ch. 32 (digital) 2.32 kW

*Broadcasting Licenses, L.P. (“BLLP”)* is the permittee of digital Low Power Television station K32LQ-D, Channel 32, Yreka, CA, Facility ID 130086. K32LQ-D, a digital companion facility associated with K41JB (analog Channel 41), is authorized pursuant to a Construction Permit (“CP” BDCCDTT-20141201AGE) to operate with 0.605 kW effective radiated power (“ERP”). *BLLP* herein seeks a minor modification of the CP for K32LQ-D to increase ERP and to utilize an alternate directional antenna.

No change in the authorized transmitting site or antenna height is proposed. As currently authorized, K32LQ-D will operate at a site located 13.0 km from the licensed companion analog site and utilize a new antenna to be situated on an existing tower structure. The tower structure is associated with FCC Antenna Structure Registration number 1201550. No change to the overall structure height will occur.

The proposed K32LQ-D facility will operate with a directional antenna at 2.32 kW ERP using a “stringent” out of channel emission mask. A plot of the directional antenna’s azimuthal pattern is supplied in Figure 1. Figure 2 depicts the coverage contour of the proposed facility as well as that of the CP facility and the K41JB licensed analog Channel 41 facility. The service area overlap demonstrates compliance with §73.3572 for a minor change and digital companion.

Interference study per OET Bulletin 69<sup>1</sup> shows that the proposal complies with the FCC’s interference protection requirements toward all digital television, television translator, LPTV,

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<sup>1</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for*

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. Accordingly, the proposal complies with §74.793 regarding interference protection to digital television, low power television, television translator, and Class A television facilities.

The nearest FCC monitoring station is 450 km distant at Livermore, CA. This exceeds by a large margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with "quiet" zones specified in §73.1030(a) and (b). There are no authorized nondirectional AM stations within 0.6 km and no authorized directional AM stations within 3.0 km of the site. The site is beyond the border areas requiring international coordination.

### **Human Exposure to Radiofrequency Electromagnetic Field**

The proposed operation 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 considering 20 percent antenna relative field in downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $12.1 \mu\text{W}/\text{cm}^2$ , which is 3.1 percent of the general population/uncontrolled maximum permitted exposure limit. This is 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.

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*Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. The default cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

This exhibit is limited to the evaluation of exposure to RF electromagnetic field. The proposed facility involves installation of a new transmitting antenna to be situated on an antenna support structure which was constructed prior to March 16, 2001. No change in structure height is proposed.

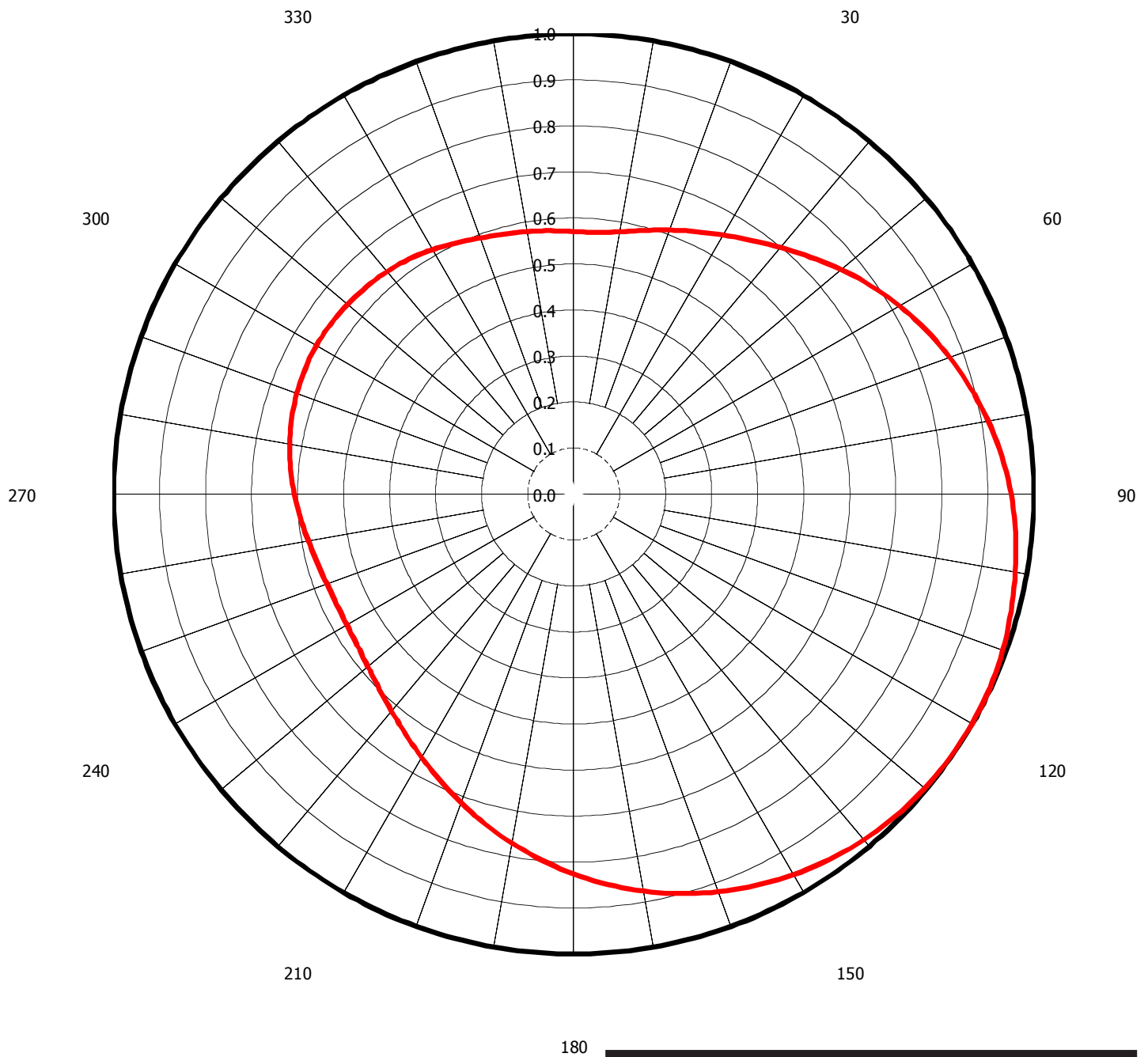
List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Table 1	Interference Analysis Results Summary
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

**Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.	March 11, 2016	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

**Azimuth Pattern - Relative Field  
(True North)**



**Figure 1**  
**Antenna Azimuthal Pattern**  
**K32LQ-D Yreka, CA**  
**Facility ID 130086**  
**Ch. 32 (digital) 2.32 kW**

prepared for  
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March, 2016

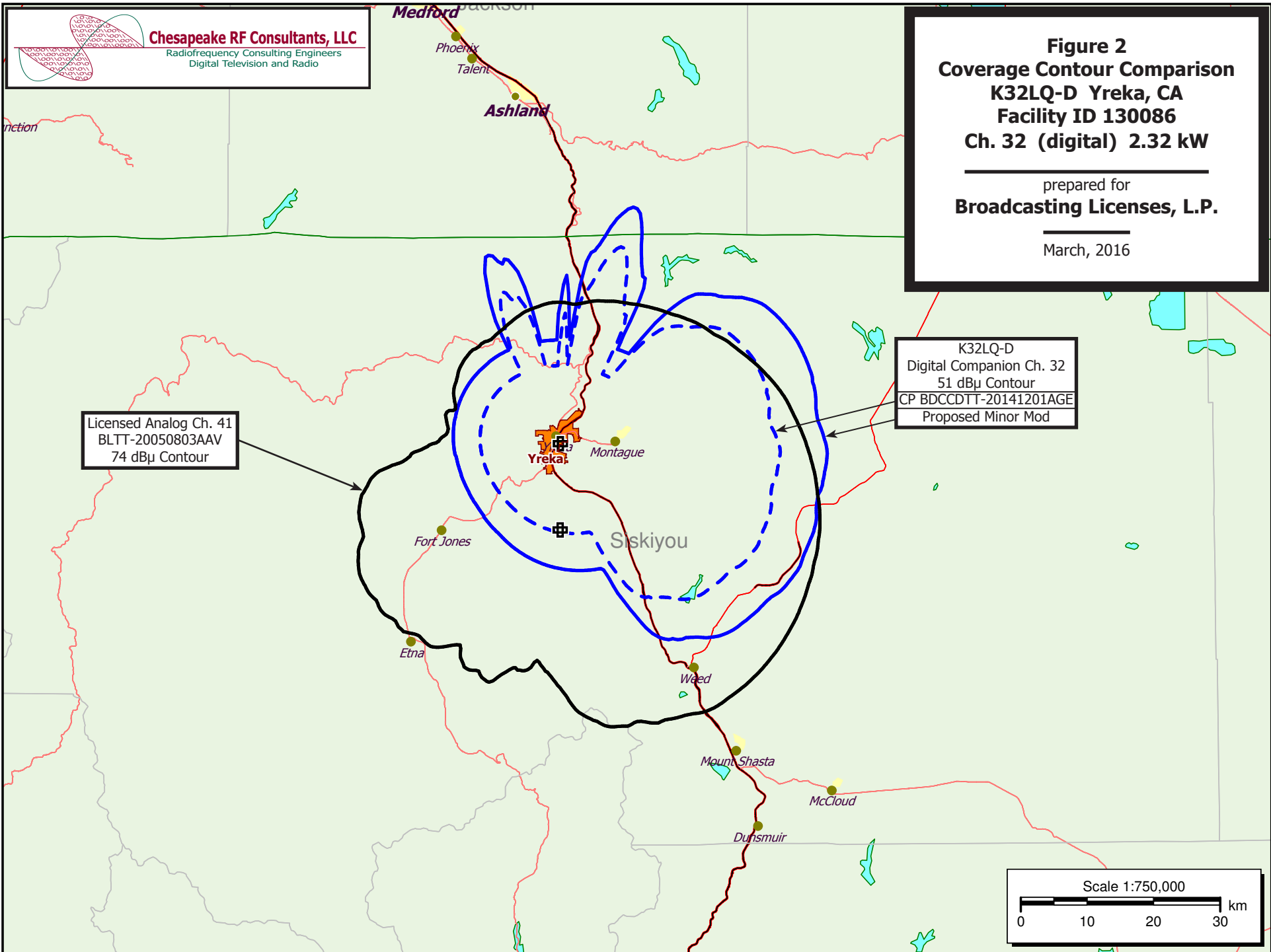


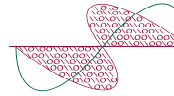
Table 1

**Interference Analysis Results Summary**

prepared for

**Broadcasting Licenses, L.P.**

K32LQ-D Yreka, CA

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

K32LQ-D	USERRECORD-01	YREKA	CA US
Channel	32 ERP 2.32 kW HAAT 84. m	RCAMSL 00998 m	STRINGENT MASK
Latitude	041-43-30	Longitude	0122-37-31
Dir Antenna	Make usr Model DIE TLP-B	Beam tilt	N Ref Azimuth 120.

The LMS application requires NAD-83 coordinates. FCC internal systems then convert to NAD-27 and port over to CDBS for processing. This interference analysis utilizes truncated NAD-27 coordinates to replicate FCC processing.

Ch.	Call	City/State	Dist (km)	Status	Application Ref. No.	---Population (2000 Census)---	
						Baseline	New Interference
25	K25CI	KLAMATH CA	108.8	LIC	BLTTL-19890623ID	---	none
31	KEUV-LP	EUREKA CA	158.2	CP	BDFCDTL-20110404AEZ	---	none
31	KEUV-LP	EUREKA CA	158.2	LIC	BLTTL-20050729AMX	---	none
31	NEW	REDDING CA	125.5	APP	BNPDTL-20090825ATG	---	none
31	NEW	REDDING CA	119.3	APP	BNPDTL-20090825BPH	---	none
31	K31GP	BROOKINGS, ETC. OR	141.7	LIC	BLTT-20051214ACA	---	none
31	K31KZ-D	LAKEVIEW OR	195.0	LIC	BLDTL-20120604AEA	---	none
31	K31AE-D	SUTHERLIN OR	186.5	LIC	BLDTT-20121203BGY	---	none
32	K32LM-D	REDDING CA	169.1	APP	BLANK-4699	---	none
32	K32LM-D	REDDING CA	169.1	CP	BDCCDTT-20130322AIG	---	none
32	KSTV-LP	SACRAMENTO CA	365.8	LIC	BLTTL-20070716ADI	---	none
32	KEMO-TV	SANTA ROSA CA	339.6	LIC	BLANK-0000001594 +	---	none
32	K32GW-D	CARSON CITY NV	368.8	LIC	BLDTT-20070529ADO	---	none
32	K32LD-D	LOVELOCK NV	372.8	CP	BNPDTL-20100512AHA	---	none
32	K32KQ-D	OROVADA NV	380.6	LIC	BLDTT-20120321ADT	---	none
32	K32JY-D	: EUGENE OR	259.8	CP	BNPDTL-20090825BHV	---	none
32	K32KP-D	BLACK BUTTE RANCH OR	301.6	LIC	BLDTT-20120606AAB	---	none
32	K32HF-D	FLORENCE OR	274.8	LIC	BLDTT-20100119ADV	---	none
32	K32JR-D	GRANTS PASS OR	114.8	CP	BNPDTL-20090825BGO	---	none
32	K32DY-D	MEDFORD` OR	64.5	LIC	BLDTA-20150213ADA	---	none
32	K32CC	MONTGOMERY RANCH,ETC OR	255.7	LIC	BLTT-19881013IC	---	none
32	K32CC	MONTGOMERY RANCH,ETC OR	255.7	CP	BDFCDTL-20100326ACI	---	none
32	KOPB-TV	NEWBERG OR	404.5	LIC	BLEDT-20130703AAD	---	none
32	K32JL-D	POWERS OR	178.3	LIC	BLDTT-20121203AHO	---	none
32	K32FI-D	YONCALLA OR	220.3	LIC	BLDTL-20110228AFN	---	none
33	KEMY-LP	EUREKA CA	158.2	CP	BDFCDTL-20110404AEY	---	none
33	KEMY-LP	EUREKA CA	158.2	LIC	BLTTL-20050729AMZ	---	none
33	K33HH	REDDING CA	119.4	LIC	BLTTL-20030507AAC	---	none
33	K33CP	GOLD BEACH OR	167.8	CP	BDFCDTT-20141014AAG	---	none
33	K33CP	GOLD BEACH OR	167.8	LIC	BLTT-19900329JJ	---	none
33	KFTS	KLAMATH FALLS OR	91.9	LIC	BLEDT-20060202AHF	---	none
33	K33GJ-D	MERLIN OR	114.7	LIC	BLDTL-20110527ALR	---	none
33	K33LZ-D	MYRTLE POINT OR	204.5	LIC	BLDTT-20120613AAS	---	none
34	K34DJ	PHOENIX, ETC. OR	64.6	LIC	BLTT-19920408IC	---	none

Channel and Facility Information

Section	Question	Response
Proposed Community of License	Facility ID	130086
	State	California
	City	YREKA
	LPT Channel	32

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1201550
Coordinates (NAD83)	Latitude	41° 43' 30.4" N+
	Longitude	122° 37' 35.7" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	20.7 meters
	Support Structure Height	15.2 meters
	Ground Elevation (AMSL)	979.6 meters
Antenna Data	Height of Radiation Center Above Ground Level	18 meters
	Height of Radiation Center Above Mean Sea Level	997.6 m
	Effective Radiated Power	2.32 kW

Antenna  
Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	No
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	DIE
	Model	DLP-8-B
	Rotation	120 degrees
	Electrical Beam Tilt	1.5
	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:	Stringent

Directional Antenna Relative Field Values (Pre-rotated Pattern)

Degree	V <sub>A</sub> (Authorized Value)	Degree	V <sub>A</sub> (Authorized Value)	Degree	V <sub>A</sub> (Authorized Value)	Degree	V <sub>A</sub> (Authorized Value)
0	1	90	0.661	180	0.645	270	0.650
10	0.996	100	0.615	190	0.641	280	0.699
20	0.981	110	0.583	200	0.631	290	0.759
30	0.955	120	0.569	210	0.613	300	0.817
40	0.920	130	0.571	220	0.592	310	0.869
50	0.876	140	0.586	230	0.579	320	0.914
60	0.826	150	0.607	240	0.570	330	0.951
70	0.771	160	0.627	250	0.579	340	0.975
80	0.714	170	0.640	260	0.610	350	0.993

Additional Azimuths

Degree	V <sub>A</sub>
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