

**TECHNICAL STATEMENT  
RE: MINOR CHANGE APPLICATION TO MODIFY  
CONSTRUCTION PERMIT - FILE NO. 0000035692  
K04QP-D 1.7 KW ERP 606.1 M HAAT CH. 4  
CASAS ADOBES, ARIZONA**

**INTRODUCTION**

KVOA License, LLC (the “Applicant”), the licensee of digital Class A television station K04QP-D, Facility ID No. 168403, seeks to modify the underlying construction permit (CP) that was previously issued for K04QP-D through the temporary lifting of the freeze by the Media Bureau.<sup>1</sup> This CP authorizes a power increase for expanding K04QP-D’s protected contour beyond its licensed facilities. The Applicant is now proposing to install its new nondirectional antenna system on an adjacent tower, which is located within one second of the geographical site coordinates specified in the aforementioned expansion CP. Because the antenna radiation center height will increase as a result of this change in location, the Applicant also seeks to avoid extending coverage beyond the authorized contour through a compensating power decrease.

**MINOR MODIFICATION OF THE PRESENT EXPANSION CP PARAMETERS**

As stated above, the Applicant proposes to install K04QP-D’s antenna on a different tower. Although the new tower is situated approximately 27 meters from the structure that was initially authorized for expanding K04QP-D’s licensed facility, the ground elevation at this new location is 5.4 meters higher.<sup>2</sup> As shown in Figure 1, the antenna radiation center height will be

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<sup>1</sup> See LMS File Number: 0000035692. Also see *Media Bureau Temporarily Lifts the Freeze on the Filing of Minor Modifications Applications That Expand the Contour of Full Power and Class A Television Stations From November 28 Through December 7, 2017*, Public Notice, DA 17-1086 (rel. Nov. 6, 2017).

<sup>2</sup> The proposed change in antenna location is not by more than one second in latitude and one second in longitude.



39.6 meters above ground level (AGL) or 1,371.5 meters above mean sea level (AMSL). No change in antenna type is specified.<sup>3</sup> A decrease in effective radiated power (ERP) from 2.0 kW to 1.7 kW is proposed to avoid any extension of the protected contour that was authorized through the temporary lifting of the freeze. A summary of the new system specifications is provided in [Figure 2](#). The attached contour map of [Figure 3](#) demonstrates that the contour authorized by expansion CP will not be extended in any direction.

With regard to interference protection, the proposed modification is not predicted to cause more than 0.5 percent new interference to other Class A or full-service television stations and not more than 2.0 percent new interference to low power television or TV translator stations. This determination is confirmed by the *TVStudy* analysis summary attached as [Figure 4](#), which indicates no interference check failures were found.<sup>4</sup>

The *TVStudy* analysis summary also indicates that the proposal is 93.9 kilometers from the border with Mexico, which is within the normal coordination distance. However, this application does not seek to increase the contour that was previously coordinated with Mexico in connection with K04QP-D's expansion CP. Therefore, no further coordination is believed to be necessary.

## ENVIRONMENTAL IMPACT

This application specifies an existing FCC registered tower that was constructed before March 16, 2001.<sup>5</sup> Given that the collocation of K04QP-D's new antenna will not result in a

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<sup>3</sup> The expansion CP specifies a "SCA Model TVO-4", which is a Kathrein TVO Series omnidirectional antenna.

<sup>4</sup> *TVStudy* Program, Version 2.2.5. The standard analysis settings for digital Class A television stations were used (i.e., cell size = 1.0 km; profile point spacing = 1.0 km).

<sup>5</sup> Antenna Structure Registration No. 1218272; Constructed January 26, 1998. 47 CFR Part 1, App. B, § III.A. "An antenna may be mounted on an existing tower constructed on or before March 16, 2001 without such collocation being reviewed through the Section 106 process set forth in the NPA, unless: 1. The mounting of the antenna will result in a substantial increase in the size of the tower as defined in Stipulation I.E, above; or, 2. The tower has been determined by the FCC to have an adverse effect on one or more historic properties, where such effect has not been avoided or mitigated through a conditional no adverse effect determination, a Memorandum of Agreement, a programmatic agreement, or a finding of compliance with Section 106 and the NPA; or, 3. The tower is the subject of a pending environmental review or related proceeding before the FCC involving compliance with Section 106 of the



substantial increase in the size of the existing antenna-supporting structure,<sup>6</sup> the criteria outlined in 47 CFR § 1.1307(a) for certain types of facilities that may significantly affect the environment do not apply. With regard to the rules for limiting human exposure to radio-frequency (RF) energy in 47 CFR § 1.1307(b), this application seeks authority to operate a television broadcast antenna in full compliance with those guidelines as described in more detail below. The following technical specifications are proposed for K04QP-D:

Frequency:	66 - 72 MHz (UHF Channel 4)
Effective Radiated Power:	1.7 kW
Antenna Type:	Nondirectional, Kathrein Model TVO-4 (four bays)
Antenna Polarization:	Horizontal
Antenna Height:	39.6 meters AGL
Location coordinates:	32-14-56.8 N, 111-06-59.9 W (NAD83)
Site elevation:	1,331.9 meters AMSL
Overall tower height:	60.0 meters AGL
FCC ASRN:	1218272, Constructed 1/26/1998

Using the methodology for predicting power density levels for television broadcast antennas outlined in *FCC OET Bulletin No. 65, Edition 97-01*, (OET-65), the proposed increase in WPTA's facilities is calculated to produce a maximum power density of 3.15  $\mu\text{W}/\text{cm}^2$  at points 2 meters above ground (approximate human head height). This exposure level was determined using 28 percent antenna relative field, which is a value that the manufacturer's calculated elevation pattern does not exceed at angles greater than 23

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*National Historic Preservation Act; or, 4. The collocation licensee or the owner of the tower has received written or electronic notification that the FCC is in receipt of a complaint from a member of the public, an Indian Tribe, a SHPO or the Council, that the collocation has an adverse effect on one or more historic properties."*

<sup>6</sup> 47 CFR Part 1, App. B, § I.C. A substantial increase in size means: "(1) The mounting of the proposed antenna on the tower would increase the existing height of the tower by more than 10%, or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to avoid interference with existing antennas; or (2) The mounting of the proposed antenna would involve the installation of more than the standard number of new equipment cabinets for the technology involved, not to exceed four, or more than one new equipment shelter; or (3) The mounting of the proposed antenna would involve adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to shelter the antenna from inclement weather or to connect the antenna to the tower via cable; or (4) The mounting of the proposed antenna would involve excavation outside the current tower site, defined as the current boundaries of the leased or owned property surrounding the tower and any access or utility easements currently related to the site."



degrees below the horizontal as depicted in Figure 5. The maximum exposure limits applicable to Channel 4, as determined in accordance with 47 CFR § 1.1310 for uncontrolled and controlled situations, are 200  $\mu\text{W}/\text{cm}^2$  and 1,000  $\mu\text{W}/\text{cm}^2$  respectively. Because the worst-case exposure level determined for K04QP-D is not more than 5 percent of those guidelines and considering warning signs are posted to establish awareness of the potential for exposure, no further showing of compliance is necessary.

Steps to limit exposure to persons authorized to access the transmitter site will be consistent with the appropriate recommendations in OET-65. All maintenance and other related work to be performed at elevations higher than 2 meters above ground will be coordinated to prevent exposure to RF fields in excess of the controlled limit. Such preventative steps shall include reducing power or shutting down the facility.

Respectfully submitted,

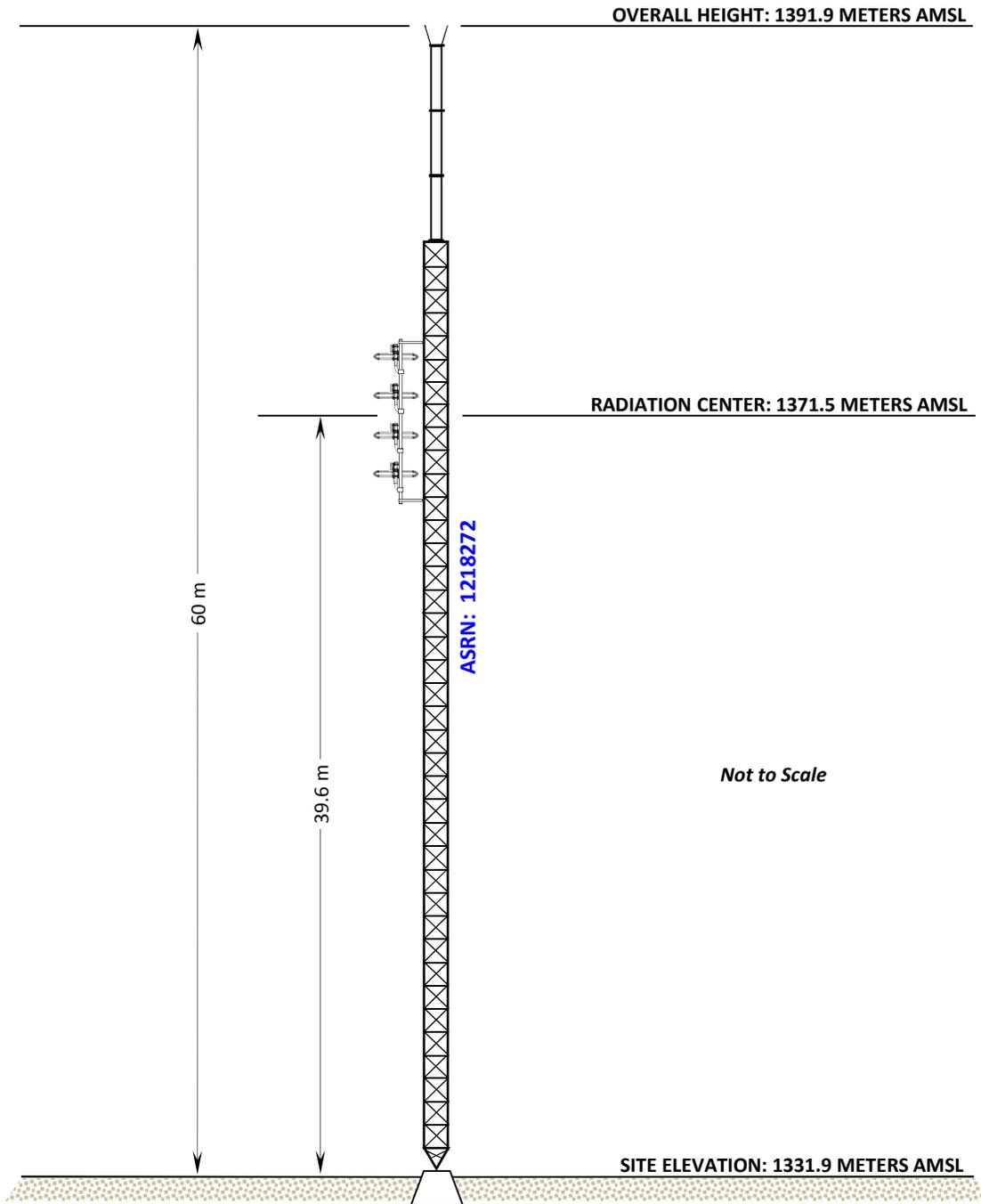
A handwritten signature in black ink, appearing to read 'Scott Turpie', written over a horizontal line.

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January 9, 2020

Attachments

- Figure 1 – Tower Sketch
- Figure 2 – Summary of System Specifications
- Figure 3 – No Extension of Coverage (Contour Map)
- Figure 4 – TVStudy Analysis Summary
- Figure 5 – Antenna Vertical Plane Pattern



Geographic Site Coordinates (NAD83)

North Latitude: 32° 14' 56.8"  
 West Longitude: 111° 06' 59.9"

**FIGURE 1**  
 TOWER SKETCH  
 K04QP-D 1.7 kW ERP 606.1 M HAAT  
 CASA ADOBES, ARIZONA

**SUMMARY OF SYSTEM SPECIFICATIONS  
K04QP-D 1.7 KW-ND ERP 606.1 M HAAT  
CASAS ADOBES, ARIZONA**

**ANTENNA SYSTEM**

<u>Channel</u>	<u>Description</u>	<u>Polarization:</u>		
4	Kathrein TVO-4	Horizontal		
<u>Antenna Parameters</u>		<u>H-pol Gain</u>	<u>V-pol Gain</u>	
Power Gain:		2.00	(3.00 dB)	
Elevation Directivity:		2.00	(3.00 dB)	
Azimuth Directivity:		1.00	(0.00 dB)	
		100.00 %		

**TRANSMISSION SYSTEM LOSSES**

<u>Description</u>	<u>Length(ft.)</u>	<u>dB/100 ft.</u>	<u>Loss (dB)</u>
Commscope AVA5-50	210	0.293	0.62
Efficiency: 86.79%			Total: 0.62

**TRANSMITTER FILTER LOSS**

<u>Description</u>	<u>Loss (dB)</u>	<u>Notes</u>

**EFFECTIVE RADIATED POWER (ERP)**

<u>FCC Authorized ERP (H-pol)</u>	<u>kW</u>	<u>dBk</u>
Proposed CP-Mod	1.7	2.30

**FCC OPERATING CONTANTS**

-0.08 dBk	TPO	0.983 kW
0.62 dB	TX Line Loss	
-0.70 dBk	Antenna Input	
3.00 dBd	H-Pol Antenna Gain	
2.30 dBk	H-Pol ERP	

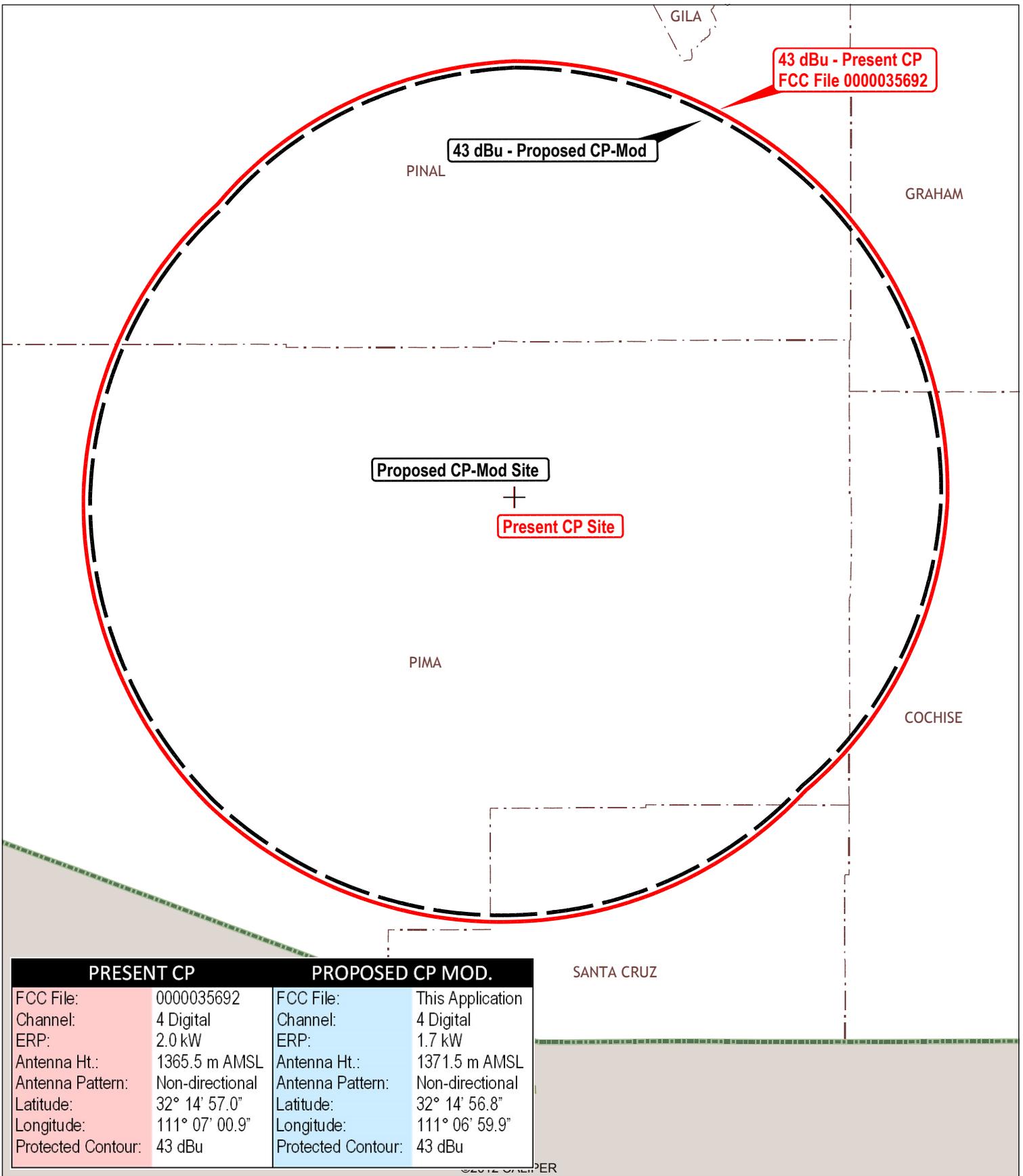
**TRANSMITTER POWER OUTPUT (TPO)**

	<u>dBk</u>	<u>kW</u>	<u>Decimal Places:</u>
Before filter / combiner:			kW: 3
<b>Input to transmission line (FCC License):</b>	<b>-0.08</b>	<b>0.983</b>	dBk: 2

**Notes:**

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**FIGURE 2**

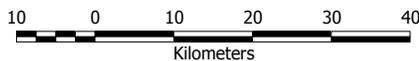


PRESENT CP		PROPOSED CP MOD.	
FCC File:	0000035692	FCC File:	This Application
Channel:	4 Digital	Channel:	4 Digital
ERP:	2.0 kW	ERP:	1.7 kW
Antenna Ht.:	1365.5 m AMSL	Antenna Ht.:	1371.5 m AMSL
Antenna Pattern:	Non-directional	Antenna Pattern:	Non-directional
Latitude:	32° 14' 57.0"	Latitude:	32° 14' 56.8"
Longitude:	111° 07' 00.9"	Longitude:	111° 06' 59.9"
Protected Contour:	43 dBu	Protected Contour:	43 dBu



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SCALE 1:1,000,000



**FIGURE 3**  
**NO EXTENSION OF COVERAGE**  
**PRESENT & PROPOSED CP CONTOURS**  
**K04QP-D 1.7 kW ERP 606.1 M HAAT CH. 4**  
**CASA ADOBES, ARIZONA**

January 2020

## FIGURE 4 TVStudy Analysis Summary VERSION 2.2.5.

Study created: 2020.01.09 18:45:12

Study build station data: LMS TV 2020-01-09

Proposal: K04QP-D D4 DC APP CASAS ADOBES, AZ  
File number: K04QP-D CP-MOD 20200109  
Facility ID: 168403  
Station data: User record  
Record ID: 595  
Country: U.S.

**Build options:**

Protect pre-transition records not on baseline channel  
Protect LPTV records from Class A

**Search options:**

Non-U.S. records included  
Baseline record excluded if station has CP

**Stations potentially affected by proposal:**

IX	Call	Chan	Svc Status	City, State	File Number	Distance
Yes	XHCAN	D4	DT LIC	AGUA PRIETA, SO	BLANKBPFS20151113AHR	183.0 km

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

**Record parameters as studied:**

Channel: D4  
Mask: Simple  
Latitude: 32 14 56.80 N (NAD83)  
Longitude: 111 6 59.90 W  
Height AMSL: 1371.5 m  
HAAT: 606.1 m  
Peak ERP: 1.70 kW  
Antenna: Omnidirectional  
Elev Patrn: Generic

**43.0 dBu contour:**

Azimuth	ERP	HAAT	Distance
0.0 deg	1.70 kW	652.6 m	80.4 km
45.0	1.70	649.3	80.3
90.0	1.70	628.3	79.6
135.0	1.70	540.1	76.2
180.0	1.70	582.9	78.1
225.0	1.70	635.9	79.9
270.0	1.70	612.2	79.1
315.0	1.70	547.7	76.6

Distance to Canadian border: 1861.6 km

\*\*Proposal is within coordination distance of Mexican border  
Distance to Mexican border: 93.9 km

Conditions at FCC monitoring station: Douglas AZ  
Bearing: 120.7 degrees Distance: 161.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 29.3 degrees Distance: 1020.0 km

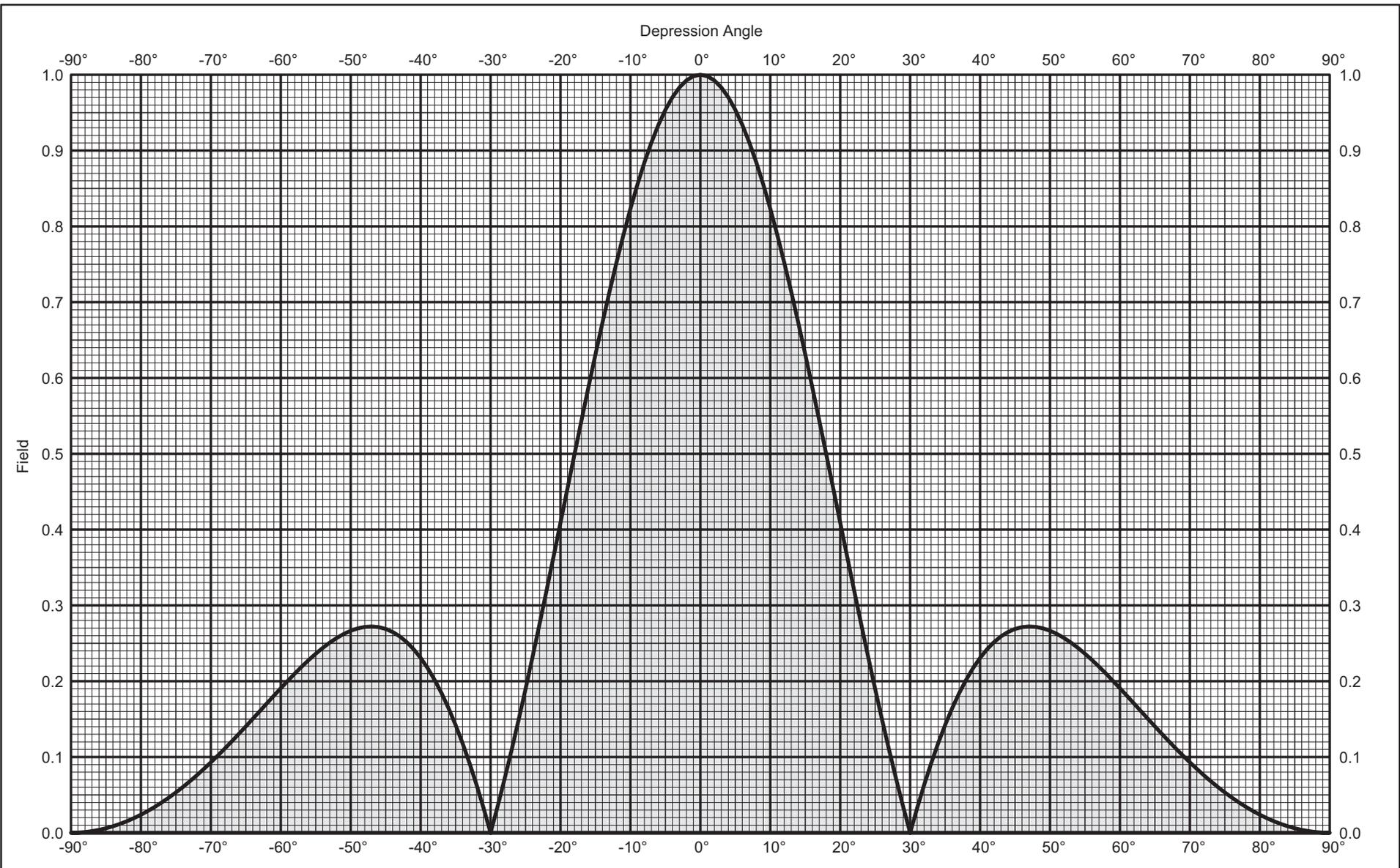
Study cell size: 1.00 km  
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%  
Maximum new IX to LPTV: 2.00%

Proposal causes no interference to BLANKBPFS20151113AHR LIC

---- Below is IX received by proposal K04QP-D CP-MOD 2020010 ----

Proposal receives 0.00% interference from scenario 1  
No IX check failures found.



TVO-4  
 Ch-4  
 Maximum gain: 3.0 dBd  
 Horizontal polarization

Vertical plane pattern



**FIGURE 5**