

**Comprehensive Technical Exhibit**  
*Application for Construction Permit*  
**KVIH-DT – Clovis, New Mexico**  
**Barrington Amarillo License LLC**  
**February, 2009**

**General**

The following engineering statement and attached exhibits have been prepared for **Barrington Amarillo License LLC** (“Barrington”), licensee of television station KVIH-TV at Clovis, New Mexico, and are in support of their application for construction permit for post-transition DTV facilities.<sup>1</sup>

KVIH-TV currently operates on channel 12 as an NTSC facility with pre-transition DTV operations on channel 20. In the post-transition environment, KVIH-DT will operate on channel 12 pursuant to the Commission’s DTV Table of Allotments as modified.<sup>2</sup> This application is being submitted to request a construction permit for the post-transition DTV facilities, which will have technical parameters identical to the modified allotment.

**Discussion of KVIH-DT Allotment and Proposed Facilities**

In the modified Appendix B table of allotments, KVIH-DT is specified as operating in the post-transition environment on channel 12. The allotment specifies a maximum effective radiated power of 5.0 kW at a center of radiation of 204 meters above average terrain. A blank antenna ID is associated with the allotment, which is consistent with the current non-directional NTSC antenna.

The NTSC antenna to be utilized in the post-transition environment is a General Electric (GE) TY-70H “superturnstile” type antenna. This is considered a non-directional antenna, and operates with 0.75 degrees of electrical beamtilt. No mechanical beamtilt is utilized or proposed.

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<sup>1</sup> The Facility ID for KVIH-TV is 40450.

<sup>2</sup> The KVIH-TV allocation was changed from channel 20 to channel 12 under MB Docket 08-132 adopted on January 26, 2009 and released on January 29, 2009.

The outgoing interference study for the proposed facility is contained in Exhibits E-1 and E-2. In the creation of this study all full-power NTSC facilities were removed, as they would be irrelevant in the post-transition environment. These two exhibits demonstrate that the proposed facility is not predicted to cause interference to any other facility in the region.

The proposed facility will comply with the community coverage requirements of Section 73.625 of the Commission's Rules. Exhibit E-3 illustrates the predicted 43 and 36 dBu F(50,90) service contours along with Longley-Rice predicted coverage bounded by the 36 dBu F(50,90) contour. As this map indicates, the field strength over the entire community of license, Clovis, New Mexico, would be equal to or exceed 43 dBu.

Exhibits E-4 and E-5 illustrate the predicted DTV service area for the proposed facility. In the creation of this study full-power NTSC facilities were eliminated from consideration as this depiction is only valid in the post-transition environment. Other facilities of interest were considered even though they are based on pending applications. As the tabulation indicates the interference-free population within the DTV service area is 84,481 persons which is 98.2 percent of the 86 thousand persons listed in the KVIH-DT allotment.

The requirements of Section 73.1030 of the Commission's Rules are not applicable. The proposed facility is not located within the radio astronomy quiet zone or within the Table Mountain radio receiving zone. The proposed facility is also not located within close proximity to any of the Commission facilities listed in Section 0.121 of the Commission's Rules.

The proposed facility will utilize a registered antenna structure. The tower on which the antenna is mounted has been assigned antenna structure registration number 1003344. No changes to the height or location of this structure are proposed.

The proposed facility should be exempt from environmental processing as it would not constitute a significant environmental impact. The absence of a significant environmental impact is predicated on two conditions. First, the proposed facility would utilize an existing antenna on an existing tower. Secondly, the proposed facility would not constitute an RF exposure hazard to persons at the site.

In addition to the post-transition KVIH-DT facilities, the tower would also support antennas for FM station KSMX-FM and FM translators K220FT and K228DQ.<sup>3</sup> For the contribution from each facility except KSMX-FM a worst case scenario in which all energy from each antenna was directed at the ground was assumed. For KVIH-DT the worst case predicted power density is determined by the following:

$$S = \frac{33.4(E_{\text{Ref}})^2(ERP)}{h^2}$$

In the case of the FM translator stations the worst case power density is determined by the following:

$$S = \frac{33.4(E_{\text{Ref}})^2(ERP_H + ERP_V)}{h^2}$$

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<sup>3</sup> The Facility ID numbers for KSMX-FM, K220FT, and K228DQ are 64495, 77537, and 81230 respectively.

Under the worst case scenario, the relative field value in each equation for each facility is simply 1.0. The height value, in meters, is assumed to be the center of radiation above ground level minus two meters to accommodate for the height of a human. Since KSMX-FM under the worst case scenario would exceed the uncontrolled environment condition of the applicable safety standard, its contribution was considered differently.

The predicted power density for KSMX-FM was determined through the use of the Commission's *FM Model* software package. CDBS lists the antenna type in use by that facility as an RCA BFC-12. Using the other technical data, FM Model predicts a maximum power density of  $21.1 \mu\text{W}/\text{cm}^2$  at 34 meters from the base of the tower. This maximum predicted power density will be assumed to occur at all points in the vicinity of the tower as are the contributions from the other facilities.

The table below provides the contribution from each facility.

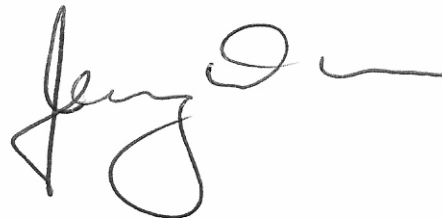
Callsign	Relative Field	ERP (kW)	COR AGL (m)	Power Density $\mu\text{W}/\text{cm}^2$
K220FT	1.00	0.180	31	14.3
K228DQ	1.00	0.174	91	0.734
KSMX-FM		100	169	21.1
KVIH-DT	1.00	5.0	208	3.94
Sum of Contributors:				40.07

The maximum permissible power density under the uncontrolled environment of the applicable safety standards is  $200 \mu\text{W}/\text{cm}^2$ . As this table indicates the sum of the contributions from each of the facilities located at the structure is considerably less than this value. It is therefore apparent that the proposed facility would not constitute an RF hazard to the general

public.<sup>4</sup> The applicant will coordinate with all other users of the site to reduce power or cease operation as necessary to protect workers having access to the tower from being exposed to levels of radiofrequency radiation in excess of the applicable safety standards.

**Affidavit**

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, 2009

**Jeremy D. Ruck, PE**  
**February 6, 2009**

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<sup>4</sup> The contribution from the pre-transition KVIH-DT and KVIH-TV NTSC facilities have been ignored as they will not exist in the post-transition environment.

**KVIH-DT.PRO**

Latitude: 34-11-34 N  
Longitude: 103-16-44 W  
ERP: 5.00 kW  
Channel: 12  
Frequency: 207.0 MHz  
AMSL Height: 1437.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: Longley/Rice  
Climate: Cont temperate  
Conductivity: 0.0050  
Dielec Const: 15.0  
Refractivity: 301.0  
Receiver Ht AG: 10.0 m  
Receiver Gain: 0 dB  
Time Variability: 10.0%  
Sit. Variability: 50.0%  
ITM Mode: Broadcast

**D.L. Markley & Associates, Inc.**

- ☒ KVIH-DT.PRO
- ☐ K12LQ
- ☐ K12MP
- ☐ K12NH
- ☐ K12OG-D.C
- ☐ K13RK-D.A
- ☐ KCBD
- ☐ KCBD-D.C
- ☐ KCBD-D

K12OG-D.C

K12LQ

KVIH-DT.PRO

K13RK-D.A

K CBD-D.C

K12MP

K12NH

**Exhibit E-1**

Outgoing Interference Study  
KVIH-DT - Clovis, New Mexico  
Barrington Amarillo License LLC  
February, 2009

Scale 1:3,000,000

0 40 80 120 km

Exhibit E-2  
 Outgoing Interference Population Report

KVIH-DT.PRO (12) Clovis, NM -  
 Broadcast Type: Digital Service: T  
 Lat: 34-11-34 N Lng: 103-16-44 W ERP: 5.0 kW AMSL: 1437.0 m  
 TV Outgoing Interference Study  
 Signal Resolution: 2.0 km  
 Consider NTSC Taboo: Yes  
 KWX error points are considered to  
     be interference free coverage.  
 Default # of radials computed for contours: 72  
 Contours calculated using 8 radial HAAT.  
 LR Profile Spacing Increment: 1.0 km  
 Masked interference points are being  
     counted as interference.  
 Pop Centroid DB: 2000 US Census (SF1)

Primary Terrain: V-Soft 3 Second US Terrain  
 Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2000 US Census (SF1)

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 Stations Considered:

Call Letters	City	State	Dist	Bear
K12LQ (12N)	Buena Vista	NM	261.7	316.9
K12MP (12N)	Timberon	NM	281.5	233.2
K12NH (12Z)	Hobbs	NM	164.9	175.8
K12OG-D.C (12)	Taos	NM	319.7	320.6
K13RK-D.A (13)	Roswell	NM	134.5	229.6
KCBD (11Z)	Lubbock	TX	151.7	118.0
KCBD-D.C (11)	Lubbock	TX	151.7	118.0
KCBD-D (11)	LUBBOCK	TX	151.7	118.0

Call	Area	HUnits	Contour	Masked	Ix	Unmasked	Ix	%
K12LQ (12N)	0.0	0	232		0		0	0.0
K12MP (12N)	0.0	0	114		0		0	0.0
K12NH (12Z)	0.0	0	15,300		0		0	0.0
K12OG-D.C (12)	0.0	0	8,796		0		0	0.0
K13RK-D.A (13)	0.0	0	59,539		0		0	0.0
KCBD (11Z)	0.0	0	366,886		0		0	0.0
KCBD-D.C (11)	0.0	0	374,943		0		0	0.0
KCBD-D (11)	0.0	0	374,943		0		0	0.0

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                   Housing Units    Population

**KVIH-DT.PRO**

Latitude: 34-11-34 N

Longitude: 103-16-44 W

ERP: 5.00 kW

Channel: 12

Frequency: 207.0 MHz

AMSL Height: 1437.0 m

Elevation: 1226.0 m

Horiz. Pattern: Omni

Vert. Pattern: Yes

Elec Tilt: 0.0

Prop Model: Longley/Rice

Climate: Cont temperate

Conductivity: 0.0050

Dielec Const: 15.0

Refractivity: 301.0

Receiver Ht AG: 10.0 m

Receiver Gain: 0 dB

Time Variability: 90.0%

Sit. Variability: 50.0%

ITM Mode: Broadcast

City of License  
Clovis, New Mexico**D.L. Markley & Associates, Inc.**

- > 43.0 dBu
- 36.0 - 43.0

**Exhibit E-3**

Coverage of Proposed Facility

KVIH-DT - Clovis, New Mexico

Barrington Amarillo License LLC

February, 2009

Scale 1:1,000,000

0 10 20 30 km

**KVIH-DT.PRO**

Latitude: 34-11-34 N

Longitude: 103-16-44 W

ERP: 5.00 kW

Channel: 12

Frequency: 207.0 MHz

AMSL Height: 1437.0 m

Horiz. Pattern: Omni

Vert. Pattern: Yes

Elec Tilt: 0.0

Prop Model: Longley/Rice

Climate: Cont temperate

Conductivity: 0.0050

Dielec Const: 15.0

Refractivity: 301.0

Receiver Ht AG: 10.0 m

Receiver Gain: 0 dB


Time Variability: 90.0%

Sit. Variability: 50.0%

ITM Mode: Broadcast

**D.L. Markley & Associates, Inc.**

- ☒ KVIH-DT.PRO
- ☐ K11JD
- ☐ KVIH-TV.A
- ☐ K12LQ
- ☐ K12MP
- ☐ K12OC
- ☐ K12OG
- ☐ K12NH
- ☐ K12OG.C
- ☐ K12OG-D.C
- ☐ K13RK
- ☐ K13RK-D.A
- ☒ KWET
- ☐ KCBD
- ☐ KCBD-D.C
- ☐ K12FM
- ☒ 537854.A
- ☒ 540871.A
- ☐ K12FM-D.C
- ☐ 524761.A
- ☐ KLBK-TV
- ☐ 525821.A
- ☐ 542409.A
- ☐ 587557.A
- ☐ 1092221.A
- ☐ KDAX-LP
- ☐ KCBD-D

 > 36.0 dBu**Exhibit E-4**

DTV Service Area

KVIH-DT - Clovis, New Mexico

Barrington Amarillo License LLC

February, 2009

Scale 1:1,000,000


  
0 10 20 30 km

Exhibit E-5  
DTV Service Area Population Tabulation

KVIH-DT.PRO (12) Clovis, NM - PROPOSED  
Broadcast Type: Digital Service: T  
Lat: 34-11-34 N Lng: 103-16-44 W ERP: 5.0 kW AMSL: 1437.0 m  
TV Incoming Interference Study  
Interference Considered Within: Noise Limited FCC Contour  
Signal Resolution: 2.0 km  
LR Profile Spacing Increment: 1.0 km  
Consider NTSC Taboo: Yes  
KWX error points are considered to  
be interference free coverage.  
# of radials computed for protected contour: 360  
Protected contour calculated using 8 radial HAAT.  
Threshold for reception: 36.0  
Pop Centroid DB: 2000 US Census (SF1)

Primary Terrain: V-Soft 3 Second US Terrain  
Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2000 US Census (SF1)

Percentages calculated using a baseline population of 86,122.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
KWET (12+)	612	1640	1.904	136.75
537854.A (12Z)	2	3	0.003	8.04
540871.A (12Z)	15	34	0.039	60.26

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
KWET (12+)	1640	1.904	1607	1.866
537854.A (12Z)	3	0.003	0	0.000
540871.A (12Z)	34	0.039	1	0.001

Stations considered which do not cause interference:

K11JD (11N)  
KVIH-TV.A (12-)  
K12LQ (12N)  
K12MP (12N)  
K12OC (12N)  
K12OG (12N)  
K12NH (12Z)  
K12OG.C (12N)  
K12OG-D.C (12)  
K13RK (13N)  
K13RK-D.A (13)

KCBD (11Z)  
 KCB-D.C (11)  
 K12FM (12N)  
 K12FM-D.C (12)  
 524761.A (12+)  
 KLBK-TV (13-)  
 525821.A (13N)  
 542409.A (13N)  
 587557.A (13Z)  
 1092221.A (13+)  
 KDAX-LP (13+)  
 KCB-D (11)

Call Letters	City	State	Dist	Bear
K11JD (11N)	Conchas Dam, Etc.	NM	147.1	324.1
KVIH-TV.A (12-)	Clovis	NM	0.0	0.0
K12LQ (12N)	Buena Vista	NM	261.7	316.9
K12MP (12N)	Timberon	NM	281.5	233.2
K12OC (12N)	Red River	NM	335.3	326.1
K12OG (12N)	Taos	NM	338.4	322.2
K12NH (12Z)	Hobbs	NM	164.9	175.8
K12OG.C (12N)	Taos	NM	319.7	320.6
K12OG-D.C (12)	Taos	NM	319.7	320.6
K13RK (13N)	Roswell	NM	134.5	229.6
K13RK-D.A (13)	Roswell	NM	134.5	229.6
KWET (12+)	Cheyenne	OK	364.8	63.8
KCBD (11Z)	Lubbock	TX	151.7	118.0
KCB-D.C (11)	Lubbock	TX	151.7	118.0
K12FM (12N)	Fort Stockton	TX	369.4	173.7
537854.A (12Z)	Amarillo	TX	162.7	47.1
540871.A (12Z)	Amarillo	TX	177.8	48.7
K12FM-D.C (12)	Fort Stockton	TX	369.4	173.7
524761.A (12+)	Midland	TX	274.6	154.6
KLBK-TV (13-)	Lubbock	TX	150.0	119.2
525821.A (13N)	Amarillo	TX	163.0	47.8
542409.A (13N)	Amarillo	TX	162.7	47.1
587557.A (13Z)	Amarillo	TX	173.4	49.1
1092221.A (13+)	Amarillo	TX	179.1	46.7
KDAX-LP (13+)	Amarillo	TX	167.7	52.7
KCB-D (11)	LUBBOCK	TX	151.7	118.0

Totals for KVIH-DT.PRO (12)

Calculation Area Population:	86,503	(	20991.3 sq. km )
Not Affected by Terrain Loss:	86,122	(	18658.2 sq. km )
Total NTSC Interference:	1,641	(	152.8 sq. km )
DTV Only Interference:	0	(	-0.0 sq. km )
Total DTV Interference:	0	(	0.0 sq. km )

Interfered Population:	1,641	( 152.8 sq. km )
Interference Free:	84,481	( 18505.4 sq. km )
Percent Interference:	1.91	
Terrain Blocked Population:	381	( 2333.1 sq. km)
Contour Area Population:	86,838	

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Interference Free Breakdown:

White:	48,613	( 57.5% )
Black:	3,655	( 4.3% )
Hispanic:	29,547	( 35.0% )
Native American:	466	( 0.6% )
Asian:	916	( 1.1% )
Pacific Islander:	51	( 0.1% )
Mixed Race:	1,156	( 1.4% )
Other:	77	( 0.1% )
Total:	84,481	

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	Housing Units	Population	% of County
New Mexico			
Chaves County			
County Pop	25,647	61,382	
KVIH-DT.PRO (12)	15	36	
Ix Free	15	36	100.00
Curry County			
County Pop	19,212	45,044	
KVIH-DT.PRO (12)	19,185	44,990	
Ix Free	19,185	44,990	100.00
De Baca County			
County Pop	1,307	2,240	
KVIH-DT.PRO (12)	14	26	
Ix Free	14	26	100.00
Lea County			
County Pop	23,405	55,511	
KVIH-DT.PRO (12)	17	31	
Ix Free	17	31	100.00
Quay County			
County Pop	5,664	10,155	
KVIH-DT.PRO (12)	172	279	
Ix Free	172	279	100.00
Roosevelt County			
County Pop	7,746	18,018	
KVIH-DT.PRO (12)	7,743	18,013	
Ix Free	7,743	18,013	100.00

	Housing Units	Population	% of County
Texas			
Bailey County			
County Pop	2,738	6,594	
KVIH-DT.PRO (12)	2,738	6,594	
Ix Free	2,738	6,594	100.00
Castro County			
County Pop	3,198	8,285	
KVIH-DT.PRO (12)	58	115	
KWET (12+)	16	31	26.96
540871.A (12Z)	1	0	0.00
Ix Free	42	84	73.04
Cochran County			
County Pop	1,587	3,730	
KVIH-DT.PRO (12)	1,214	2,865	
Ix Free	1,214	2,865	100.00
Deaf Smith County			
County Pop	6,914	18,561	
KVIH-DT.PRO (12)	11	18	
KWET (12+)	1	1	5.56
540871.A (12Z)	2	2	11.11
Ix Free	9	16	88.89
Hockley County			
County Pop	9,148	22,716	
KVIH-DT.PRO (12)	32	47	
Ix Free	32	47	100.00
Lamb County			
County Pop	6,294	14,709	
KVIH-DT.PRO (12)	1,428	3,303	
Ix Free	1,428	3,303	100.00
Parmer County			
County Pop	3,732	10,016	
KVIH-DT.PRO (12)	3,653	9,805	
KWET (12+)	595	1,608	16.40
537854.A (12Z)	2	3	0.03
540871.A (12Z)	12	32	0.33
Ix Free	3,058	8,197	83.60