

## **ENGINEERING EXHIBIT**

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

prepared for

**Mirage Media 2, LLC**  
KOTR-LD Santa Cruz, CA  
Facility ID 167425  
Ch. 11 (Digital) 1.85 kW

*Mirage Media 2, LLC* (“*Mirage*”) is the permittee of digital low power television (“LPTV”) station KOTR-LD, Facility ID 167425, Santa Cruz, CA (BDISDVL-20100810AAU). KOTR-LD is the digital companion facility associated with KOTR-LP, analog Channel 2, Facility ID 2871 (BLTVL-20100721DAA). *Mirage* herein seeks to modify the KOTR-LD Construction Permit to increase the effective radiated power (“ERP”) at the currently authorized antenna location.

KOTR-LD is authorized to operate at 0.074 kW ERP with a nondirectional antenna. As proposed herein, the ERP would be raised to 1.85 kW nondirectional and utilize a “full service” out of channel emission mask (see DA 11-375 in MB Docket 03-185). No changes are proposed to the authorized antenna’s location or height. The KOTR-LD antenna system will be side-mounted on a tower structure associated with Antenna Structure Registration number 1056768. No change to the overall structure height is proposed.

Figure 1 depicts the 51 dB $\mu$  coverage contour of the proposed facility as well as that of the authorized facility and the associated analog KOTR-LP. The service area overlap demonstrates compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69<sup>1</sup> shows that the proposal complies with the Commission's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. **FCC analysis using a cell size of 1 km and a terrain step size (distance increment) of 0.2 km is requested.** The results, summarized in Table 1, show that any new interference does not exceed the Commission's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility except with respect to those described below which do not present a conflict for the proposal.

- A. 2.27 percent interference is predicted to be caused to the K11WC-D Construction Permit (Ch. 11, Fresno, CA, BDCCDVL-20070510ACM). This CP expired on August 1, 2010 and protection to that facility is no longer necessary.
- B. 77.89 percent interference is predicted to be caused to the KMUV-LD Construction Permit (Ch. 11, Monterey, CA, BDCCDVL-20061026ACY). This CP expired on January 12, 2010 and protection to that facility is no longer necessary.

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

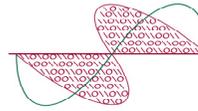
The nearest FCC monitoring station is 68.6 km distant at Livermore, CA. This exceeds the threshold minimum distance specified in §73.1030(c)(3) for 1.85 kW ERP that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with "quiet" zones specified in §73.1030(a) and (b). The Land-Mobile protections of §73.709 are not relevant for Channel 11. There are no AM stations within 3.2 kilometers of the site. The site location 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 Commission's OET Bulletin Number 65. Based on OET-65 equation (10)

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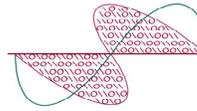
<sup>1</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km and terrain increment step size of 0.2 km were 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.



and considering 30 percent antenna relative field in downward elevations (manufacturer's elevation pattern data shows less than 30 percent relative field at elevations 25-90 degrees below the horizontal), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $5.1 \mu\text{W}/\text{cm}^2$  which is 2.6 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.

This exhibit is limited to the evaluation of exposure to RF electromagnetic field. The proposed transmitting antenna will be side-mounted on an existing antenna support structure which was constructed prior to March 16, 2001. No change in structure height is proposed.



### **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.

A handwritten signature in blue ink, appearing to read "Joseph M. Davis". The signature is fluid and cursive.

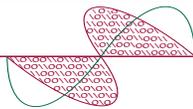
Joseph M. Davis, P.E.  
August 26, 2011

**Chesapeake RF Consultants, LLC**  
207 Old Dominion Road  
Yorktown, VA 23692  
703-650-9600

### List of Attachments

Figure 1	Coverage Contour Comparison
Table 1	Interference Analysis Results Summary
Form 346	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered August 26, 2011 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*



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

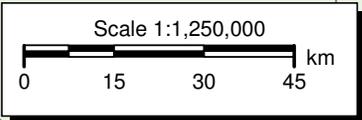
**Figure 1**  
**Coverage Contour Comparison**  
**KOTR-LD Santa Cruz, CA**  
**Facility ID 167425**  
**Ch. 11 (Digital) 1.85 kW**

prepared for  
**Mirage Media 2, LLC**

August, 2011

KOTR-LD Ch. 11  
 51 dB $\mu$  Contour  
 Authorized 0.074 kW  
 BDISDVL-20100810AAU  
 Proposed 1.85 kW

Paired Analog Ch. 2 (Lic)  
 KOTR-LP BLTVL-20100721DAA  
 62 dB $\mu$  Contour



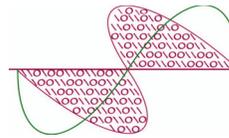
**Table 1**

**Interference Analysis Results Summary**

prepared for

**Bluestone License Holdings Inc.**

**KRCR-TV Redding, CA**



**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

KOTR-LD USERRECORD-01 SANTA CRUZ CA US  
 Channel 11 ERP 1.85 kW HAAT 790. m RCAMSL 01181 m FULL SERVICE MASK  
 Latitude 037-06-39 Longitude 0121-50-37  
 Nondirectional antenna

Cell Size for Service Analysis 1.0 km/side  
Distance Increments for Longley-Rice Analysis 0.20 km

Ch.	Call	City/State	Dist (km)	Status	Application Ref. No.	---Population (2000 Census)---	
						Baseline	New Interference
10	KXTV	SACRAMENTO CA	129.1	LIC	BLCDDT-20090622ADB	6,391,179	30,752 (0.48%)
10	KXTV	SACRAMENTO CA	129.1	CP MOD	BMPCDDT-20080620AMX	6,757,674	20,631 (0.31%)
11	KKEY-LP	BAKERSFIELD CA	334.5	LIC	BLTVL-20031016ABY	---	none
11	K11HS	BRIDGEPORT, ETC. CA	260.1	LIC	BLTTV-19821001IA	---	none
11	K11VZ-D	CHICO CA	316.7	LIC	BLDVL-20080728AEJ	---	none
11	K11WP-D	CLOVERDALE CA	216.3	CP	BNPDVL-20090826AAA	13,169	255 (1.94%)
11	K11TD	HOPLAND CA	230.5	LIC	BLTTV-19921013JE	---	none
11	KNSO	MERCED CA	214.0	LIC	BLCDDT-20100202ABE	1,721,647	2,391 (0.14%)
11	K11ML	RIDGECREST, ETC. CA	412.1	LIC	BLTTV-4571	---	none
11	NEW	SACRAMENTO CA	149.3	APP	BSFDDL-20060630ALE	524,927	128 (0.02%)
12	K12OZ	FRESNO CA	196.5	APP	BPTVA-20040324AFP	---	none
12	K12OZ	FRESNO CA	196.5	LIC	BLTVL-19980903JC	---	none
12	KNTV	SAN JOSE CA	82.4	LIC	BLCDDT-20050923AHA	6,634,163	5,783 (0.09%)

CDDBS shows the following Construction Permits as current. However they have both expired and protection is no longer necessary.

11	K11WC-D	FRESNO CA	167.0	CP	BDCCDDL-20070510ACM	30,913	702 (2.27%)
		(CP expired on 08/01/2010)					
11	KMUV-LD	MONTEREY CA	49.8	CP	BDCCDDL-20061026ACY	789,096	614,594 (77.89%)
		(CP expired on 01/12/2010)					

<b>Section III - Engineering (Digital)</b>																																																																																																											
<b>TECHNICAL SPECIFICATIONS</b>																																																																																																											
Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.																																																																																																											
<b>TECH BOX</b>																																																																																																											
1.	Channel: 11																																																																																																										
2.	Translator Input Channel No. :																																																																																																										
3.	Primary station proposed to be rebroadcast:																																																																																																										
	Facility Identifier	Call Sign	City	State	Channel																																																																																																						
4.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 37 Minutes 6 Seconds 39 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 121 Minutes 50 Seconds 37 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																										
5.	Antenna Structure Registration Number: 1056768 <input type="checkbox"/> Not Applicable [Exhibit 11] <input type="checkbox"/> Notification filed with FAA																																																																																																										
6.	Antenna Location Site Elevation Above Mean Sea Level: 1146 meters																																																																																																										
7.	Overall Tower Height Above Ground Level: 48.8 meters																																																																																																										
8.	Height of Radiation Center Above Ground Level: 35 meters																																																																																																										
9.	Maximum Effective Radiated Power (ERP): 1.85 kW																																																																																																										
10.	Transmitter Output Power: 1.3 kW																																																																																																										
11.	<p>a. Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under <a href="http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm">CDBS Public Access</a> (http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input checked="" type="radio"/> Nondirectional <input type="radio"/> Directional Off-the Shelf <input type="radio"/> Directional composite  Manufacturer SCA Model TVO-4</p> <p>b. Electrical Beam Tilt: degrees <input checked="" type="checkbox"/> Not Applicable</p> <p>c. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> N/A (Nondirectional or Off-the-Shelf) Rotation (Degrees): <input type="checkbox"/> No Rotation</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th> </tr> </thead> <tbody> <tr> <td>0</td><td></td><td>10</td><td></td><td>20</td><td></td><td>30</td><td></td><td>40</td><td></td><td>50</td><td></td> </tr> <tr> <td>60</td><td></td><td>70</td><td></td><td>80</td><td></td><td>90</td><td></td><td>100</td><td></td><td>110</td><td></td> </tr> <tr> <td>120</td><td></td><td>130</td><td></td><td>140</td><td></td><td>150</td><td></td><td>160</td><td></td><td>170</td><td></td> </tr> <tr> <td>180</td><td></td><td>190</td><td></td><td>200</td><td></td><td>210</td><td></td><td>220</td><td></td><td>230</td><td></td> </tr> <tr> <td>240</td><td></td><td>250</td><td></td><td>260</td><td></td><td>270</td><td></td><td>280</td><td></td><td>290</td><td></td> </tr> <tr> <td>300</td><td></td><td>310</td><td></td><td>320</td><td></td><td>330</td><td></td><td>340</td><td></td><td>350</td><td></td> </tr> <tr> <td colspan="2">Additional Azimuths</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table> <p>d. Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt? <input type="radio"/> Yes <input checked="" type="radio"/> No [Exhibit 12]  If Yes, attach an Exhibit (see instructions for details).</p>											Degrees	Value	0		10		20		30		40		50		60		70		80		90		100		110		120		130		140		150		160		170		180		190		200		210		220		230		240		250		260		270		280		290		300		310		320		330		340		350		Additional Azimuths																					
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[Relative Field Polar Plot](#)

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

12.	<b>Out-of-channel Emission Mask:</b> <input type="radio"/> Simple <input type="radio"/> Stringent <input checked="" type="radio"/> Full Service
<b>CERTIFICATION</b>	
13.	<p><b>Interference</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), 74.794(b) and 73.1030.</p> <p style="text-align: right;"><input checked="" type="radio"/> Yes   <input type="radio"/> No</p> <p style="text-align: right;">See Explanation in [Exhibit 13]</p>
14.	<p><b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an <b>Exhibit is required.</b></p> <p style="text-align: right;"><input checked="" type="radio"/> Yes   <input type="radio"/> No</p> <p style="text-align: right;">See Explanation in [Exhibit 14]</p> <p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>
15.	<p><b>Channels 52-59.</b> If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:</p> <p><input type="checkbox"/> The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.</p> <p><input type="checkbox"/> Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.</p>
16.	<p><b>Channels 60-69.</b> If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:</p> <p><input type="checkbox"/> Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application , all commercial wireless licenses of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.</p> <p><input type="checkbox"/> Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreements(s) with 700 MHz public safety regional planning committee(s) and state administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.</p> <p><input type="checkbox"/> Pursuant to Section 74.786(e), the applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.</p>
<b>PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.</b>	

### SECTION III PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.	Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER
-------------------------------	--

Signature		Date 8/26/2011	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 207 OLD DOMINION ROAD			
City YORKTOWN	State or Country (if foreign address) VA	Zip Code 23692 -	
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM		

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

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## Exhibits

### Attachment 1

#### Exhibit 13

**Description:** EXHIBIT 11

FCC ANALYSIS USING A CELL SIZE OF 1 KM AND A TERRAIN STEP SIZE (DISTANCE INCREMENT) OF 0.2 KM IS REQUESTED.

SEE ENGINEERING EXHIBIT.

OET BULLETIN 69 ANALYSIS SHOWS THAT ANY NEW INTERFERENCE DOES NOT EXCEED THE COMMISSIONS INTERFERENCE LIMITS (0.5 PERCENT TO FULL POWER AND CLASS A STATIONS, AND 2.0 PERCENT TO SECONDARY STATIONS) TO ANY FACILITY EXCEPT WITH RESPECT TO THOSE DESCRIBED BELOW WHICH DO NOT PRESENT A CONFLICT FOR THE PROPOSAL.

A. 2.27 PERCENT INTERFERENCE IS PREDICTED TO BE CAUSED TO THE K11WC-D CONSTRUCTION PERMIT (CH. 11, FRESNO, CA, BDCCDVL-20070510ACM). THIS CP EXPIRED ON AUGUST 1, 2010 AND PROTECTION TO THAT FACILITY IS NO LONGER NECESSARY.

B. 77.89 PERCENT INTERFERENCE IS PREDICTED TO BE CAUSED TO THE KMUV-LD CONSTRUCTION PERMIT (CH. 11, MONTEREY, CA, BDCCDVL-20061026ACY). THIS CP EXPIRED ON JANUARY 12, 2010 AND PROTECTION TO THAT FACILITY IS NO LONGER NECESSARY.