

## **ENGINEERING EXHIBIT**

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

prepared for

#### **Gray Television Licensee, LLC**

K24JT-D Paris, TX

Facility ID 183677

Ch. 24 (digital) 15 kW

*Gray Television Licensee, LLC* (“Gray”) is the permittee of unbuilt Low Power Television station K24JT-D, digital Channel 24, Paris, TX, Facility ID 183677. A Construction Permit (“CP” BNPDDT-20091119ABR) authorizes operation with 15 kW effective radiated power (“ERP”) using a nondirectional antenna. *Gray* herein proposes herein to modify the CP to specify a different transmitting location and reduced antenna height.

The proposed facility will employ a new antenna system to be side-mounted on an existing tower structure associated with Antenna Structure Registration (“ASR”) number 1052010. No change to the overall structure height is proposed.

The proposed site is located 32.2 km from the currently authorized site and more than 121 kilometers (75 miles) from the reference coordinates of the cities listed in Appendix A of DA 09-1487.<sup>1</sup>

The proposed facility will operate on the currently authorized Channel 24 as digital at 15 kW ERP using a “simple” out of channel emission mask. Figure 1 depicts the coverage contour of the proposed facility as well as that of the K24JT-D authorized facility. The service area overlap shown demonstrates 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.

Detailed interference study per OET Bulletin 69<sup>2</sup> shows that the proposal complies with the Commission'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 Commission'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 722 km distant at Kingsville, TX. 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). The site is not within a border area requiring international coordination. There are no authorized AM radio stations within 3.2 km of the proposed site.

### **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), and considering 10 percent antenna relative field in downward elevations (manufacturer's data shows relative at less than 10 percent at angles at least 25 degrees below horizontal), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $1.8 \mu\text{W}/\text{cm}^2$ , which is 0.5 percent of the general population/uncontrolled maximum permitted 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.

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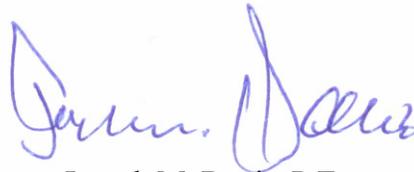
<sup>2</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. 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.

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 with no change in overall structure height.

### **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.



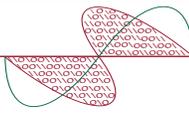
Joseph M. Davis, P.E.  
August 27, 2012

**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

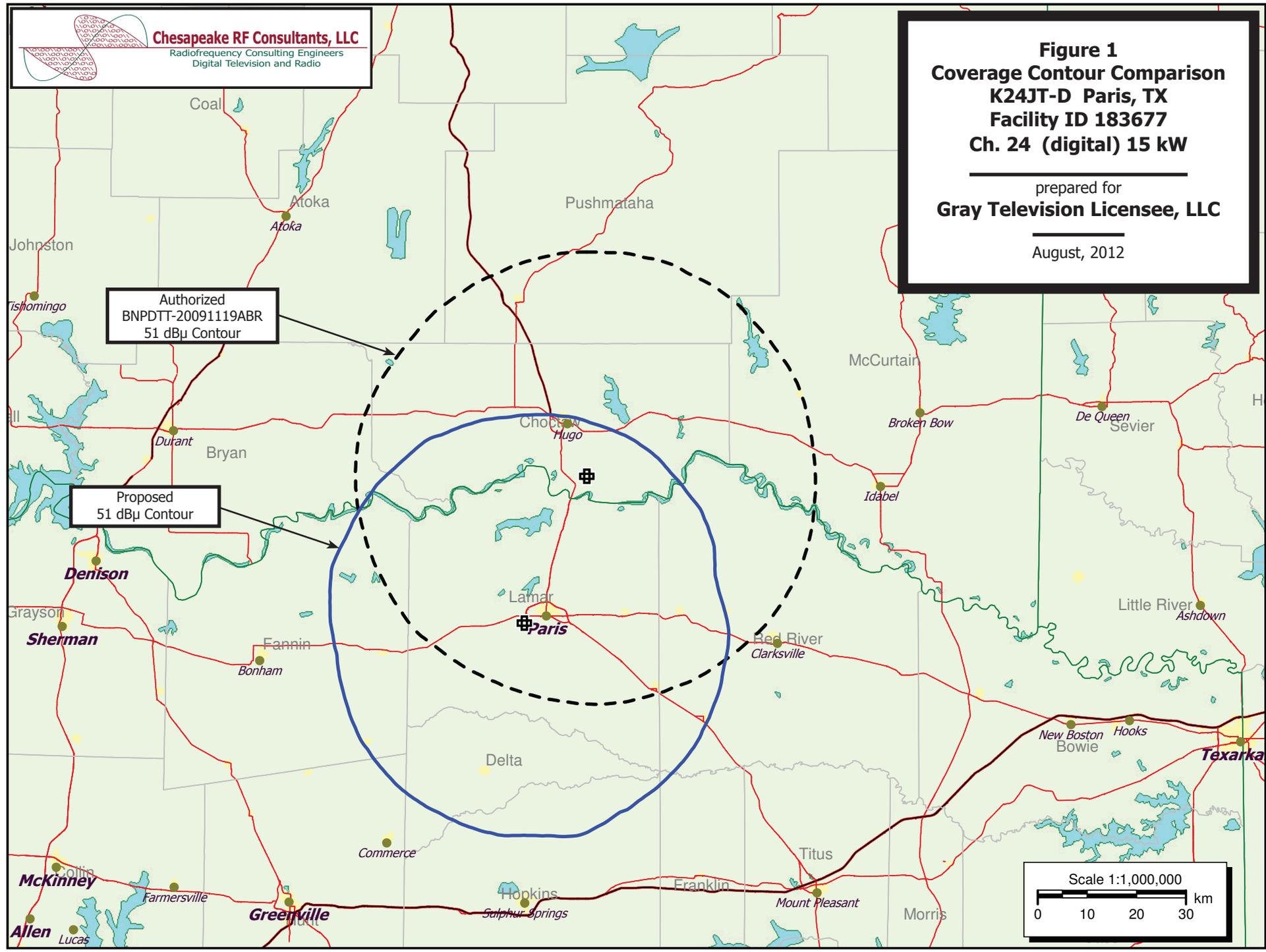
*This material was entered August 27, 2012 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*



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

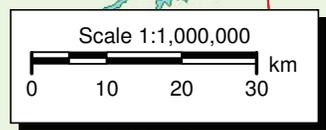
**Figure 1**  
**Coverage Contour Comparison**  
**K24JT-D Paris, TX**  
**Facility ID 183677**  
**Ch. 24 (digital) 15 kW**

prepared for  
**Gray Television Licensee, LLC**  
August, 2012



Authorized  
BNPDTT-20091119ABR  
51 dBu Contour

Proposed  
51 dBu Contour





<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: 24											
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 33 Minutes 38 Seconds 54 <input checked="" type="radio"/> North <input type="radio"/> South											
	Longitude:											
	Degrees 95 Minutes 36 Seconds 12 <input checked="" type="radio"/> West <input type="radio"/> East											
5.	Antenna Structure Registration Number: 1052010											
	<input type="checkbox"/> Not Applicable [Exhibit 11] <input type="checkbox"/> Notification filed with FAA											
6.	Antenna Location Site Elevation Above Mean Sea Level:										172.2 meters	
7.	Overall Tower Height Above Ground Level:										93.3 meters	
8.	Height of Radiation Center Above Ground Level:										76.2 meters	
9.	Maximum Effective Radiated Power (ERP):										15 kW	
10.	Transmitter Output Power:										2.43 kW	
11.	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 ERI    Model AL12-24-PLC CIRCULARLY POLARIZED											
	b. Electrical Beam Tilt: 1.25 degrees <input type="checkbox"/> Not Applicable											
	c. Mechanical Beam Tilt:    degrees toward azimuth    degrees True <input checked="" type="checkbox"/> Not Applicable											
	d. Directional Antenna Relative Field Values: <input checked="" type="checkbox"/> N/A (Nondirectional or Off-the-Shelf)											
	Rotation (Degrees): <input type="checkbox"/> No Rotation											
	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	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											
	e. Does the proposed antenna propose elevation radiation patterns that vary with azimuth for <input type="radio"/> Yes <input checked="" type="radio"/> No											

reasons other than the use of mechanical beam tilt?	[Exhibit 12]
If Yes, attach an Exhibit (see instructions for details).	

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 checked="" type="radio"/> Simple <input type="radio"/> Stringent <input type="radio"/> Full Service
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**CERTIFICATION**

13.	<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.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 13]
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14.	<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>	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 14]
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.		

15.	<b>Channels 52-59.</b> If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:
<input type="checkbox"/> The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.	
<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.	

16.	<b>Channels 60-69.</b> If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:
<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.	
<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.	
<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.	

**PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**

### 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 8/27/2012	
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		