

ENGINEERING EXHIBIT

Application for Modification of Digital Television Construction Permit

prepared for

Gray Television Licensee, Inc.

KBTX-DT Bryan, TX

Facility ID 6669

Ch. 50 790 kW 507 m

Gray Television Licensee, Inc. (“*Gray*”) is the licensee of television station KBTX-TV, analog Channel 3, Bryan, TX. *Gray* is authorized by a Construction Permit (“CP”, BMPCDT-20020604AAT) to operate the paired KBTX-DT digital Channel 50 facility at 1000 kW effective radiated power (“ERP”) and an antenna height above average terrain (“HAAT”) of 477 meters. The CP authorizes use of a side-mount, directional antenna. KBTX-DT is currently operating under Special Temporary Authorization (“STA”) with a reduced ERP of 25 kW and 451 meters antenna HAAT (BDSTA-20020923ACM, as extended).

Gray’s plan for KBTX-DT, a satellite of KWTX-TV (Waco, TX), involves installation of a new top-mount antenna for digital Channel 50 operation in December, 2008, in place of the current analog Channel 3 transmitting antenna. The instant application proposes to modify the CP to specify operation of KBTX-DT with the top mount antenna for the remainder of the transition. An ERP of 790 kW is proposed, with a directional antenna at 507 meters HAAT, to conform closely to but not exceed the current CP coverage contour.

Gray also proposes herein to operate KBTX-DT with the 790 kW / 507 meter top-mount facility in the post-transition period. Appendix B of the Seventh Report and Order in MB Docket 87-278 specifies KBTX-DT’s post-transition allotment on Channel 50 with the 1000 kW / 477 meter facilities authorized in the current CP. *Gray* requests that the Appendix B parameters for KBTX-DT be modified to indicate the parameters specified herein.

The proposed KBTX-DT antenna system is a Dielectric model TFU-30GTH/VP-R 6T140. Elliptical polarization is proposed (25 percent vertical polarization). The maximum horizontally polarized ERP is 790 kW, and the maximum vertically polarized ERP is 197.5 kW. The vertically polarized component will not exceed the horizontally polarized component at any azimuth. The directional antenna's azimuthal patterns are depicted in **Figures 1** and **1A** for horizontal and vertical polarization, respectively. **Figures 2** and **2A** provide the theoretical vertical plane (elevation) pattern¹.

The antenna will be top-mounted on the existing KBTX-TV antenna supporting structure, as a replacement to the present top-mounted analog Channel 3 antenna. The overall structure's height will be reduced by 16.8 meters (from 519.7 meters AGL to 502.9 meters). Notification to the FAA of the reduction in tower height will be made and the corresponding FCC Antenna Structure Registration (number 1062868) will be modified upon approval from the FAA.

A map is supplied as **Figure 3**, which depicts the standard predicted coverage contours. This map includes the boundaries of Bryan, KBTX-DT's principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1), as the entire principal community will be encompassed by the 48 dB μ contour.

The map attached as **Figure 4** supplies a comparison of the 41 dB μ digital service contour corresponding to the proposed KBTX-DT facility (790 kW / 507 m) and the current CP (1000 kW / 477 m). No extension in contour location beyond that of the current CP will result, in compliance with the Commission's August 3, 2004 "freeze" concerning expansion in service area.² Further, the proposed coverage contour does not extend beyond that associated with the Appendix B parameters, which match the current CP (1000 kW / 477 m).

¹ These patterns are supplied in terms of relative field. In recent years, FCC Staff have not required pattern data in dBk format however such patterns are available upon request.

²Public Notice "Freeze on the Filing of Certain TV and DTV Requests for Allotment or Service Area Changes," DA 04-2446, released August 3, 2004.

The proposed KBTX-DT facility’s predicted service population provides a 97.3 percent match of the Appendix B facility, as detailed in the table below.

Post-Transition Population Summary

Population Summary (2000 Census) OET Bulletin 69 method	Appendix B	Proposed
Within Noise Limited Contour	2,956,809	2,873,958
Not affected by terrain losses	2,954,354	2,873,476
Lost to all interference	504	386
Net DTV Service	2,953,850	2,873,090
Match of Appendix B	---	97.27%

The proposed 507 meter antenna HAAT exceeds the allotment value for the transition (1000 kW / 477 m from MM Docket 00-124, FCC 02-786, April, 2002) by over 10 meters, therefore an interference analysis is required for operation during the transition period,. A detailed interference study per OET Bulletin 69³ shows that the proposal complies with the Commission’s 2% / 10% *de minimis* interference limits for operation during the transition, as summarized in **Table 1**. Protection requirements towards authorized Class A stations are satisfied. Thus, this proposal complies with the provisions of §73.623(c)(2) of the Commission’s rules.

Regarding impact to post-transition operations, since no extension in contour location beyond that of the 2007 Appendix B (Seventh R&O) allotment will result, interference analysis to other post-transition television facilities is not required.

The nearest FCC monitoring station is 389 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 also located outside the areas specified in §73.1030(a)(1) and §73.1030(b). Thus, notification of the instant proposal to the National Radio Astronomy Observatory at Green Bank, West Virginia, or the Table Mountain Radio Receiving

³FCC 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 standard cell size of 2 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.

Zone in Boulder County, Colorado is not required. There are no AM stations within 3.2 kilometers of the site, based on information contained within the Commission's database. The site location is beyond the border areas that would require international coordination.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed transmitting antenna's installation will involve a reduction in overall tower height. Since no increase in height is proposed, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

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 (pattern data shows less than 10 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $1.4 \mu\text{W}/\text{cm}^2$, which is 0.3 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.

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.

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.
February 26, 2008

Chesapeake RF Consultants, LLC
11993 Kahns Road
Manassas, VA 20112
703-650-9600

List of Attachments

Figure 1, 1A Antenna Horizontal Plane Pattern
Figure 2, 2A Antenna Vertical Plane (Elevation) Pattern
Figure 3 Proposed Coverage Contours
Figure 4 Coverage Contour Comparison
Table 1 Transition Interference Analysis Results Summary
Form 301 Saved Version of Engineering Sections from FCC Form at Time of Upload

This material was entered February 26, 2008 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name 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.

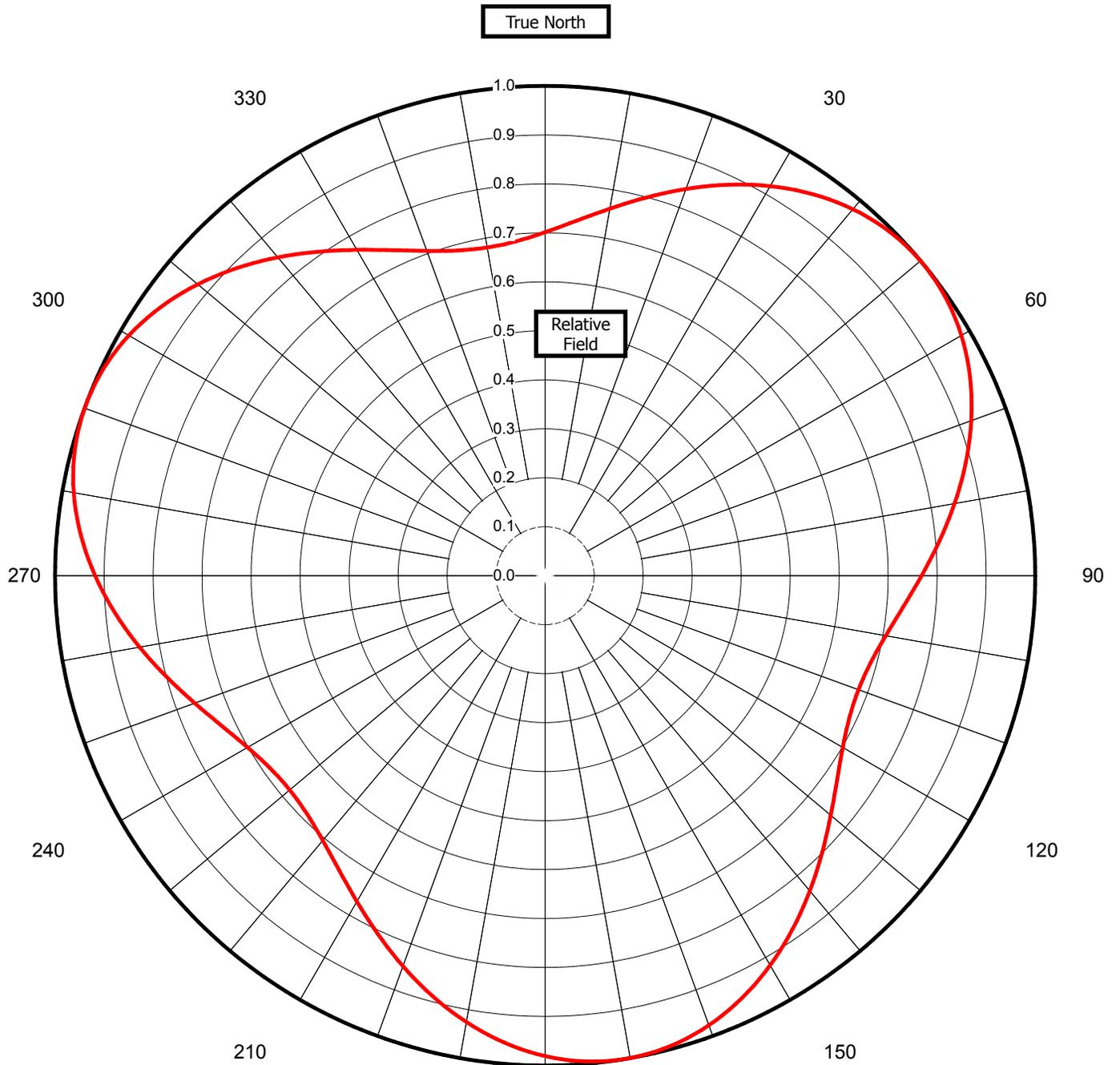


Proposal Number **C-01975** Revision: **5**
Date **19-Feb-08**
Call Letters **KBTX-DT** Channel **50**
Location **Bryan, TX**
Customer
Antenna Type **TFU-30GTH/VP-R 6T140**

Figure 1
Antenna Horizontal Plane
Pattern - Horizontal Polarization

AZIMUTH PATTERN

Gain **1.40** (**1.46 dB**) Frequency **689.00 MHz**
Calculated / Measured **Calculated** Drawing # **TFU-6T140**





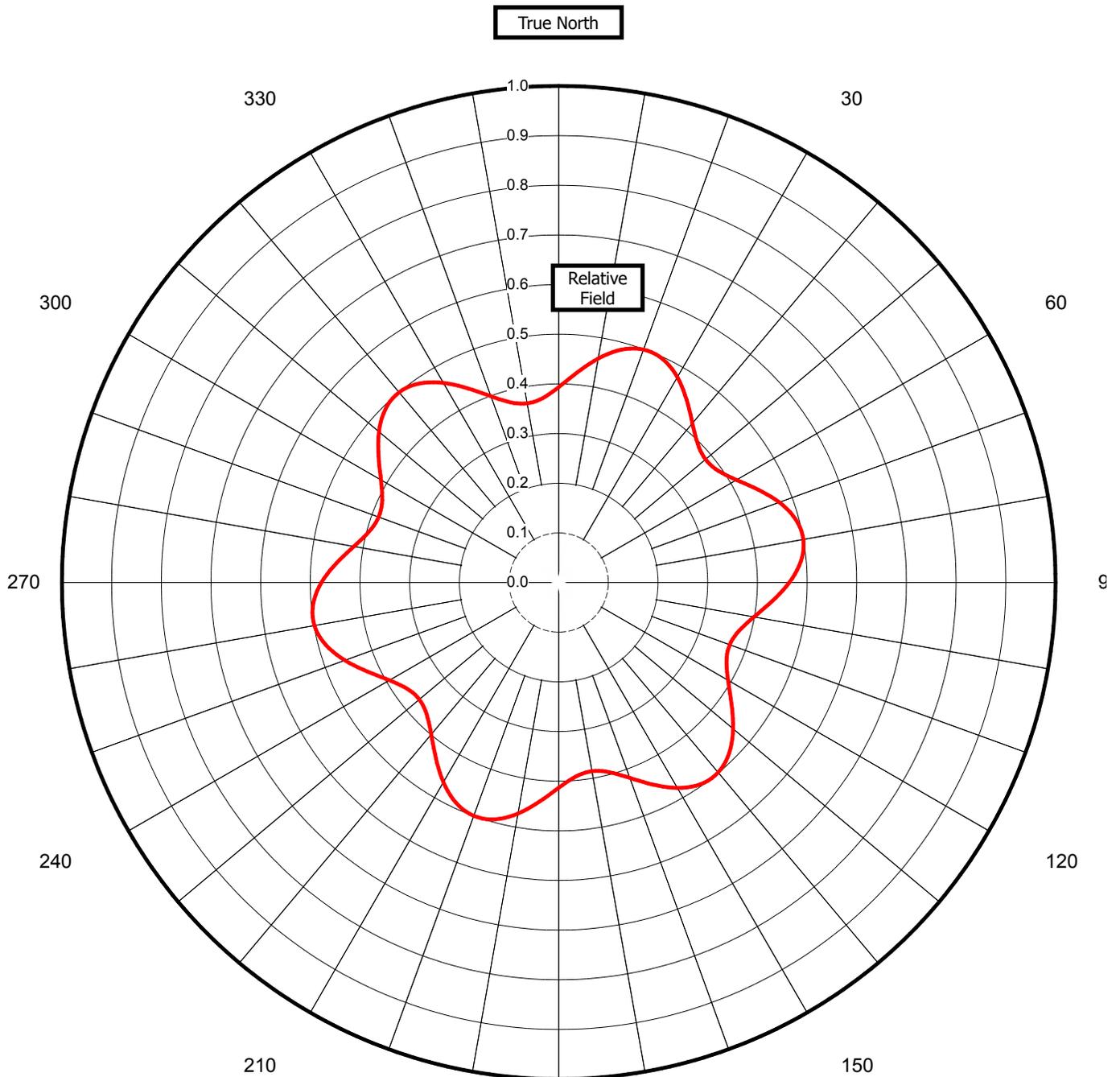
Proposal Number **C-01975** Revision: **5**
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Figure 1A
Antenna Horizontal Plane
Pattern - Vertical Polarization

AZIMUTH PATTERN/VERTICAL POLARIZATION

Gain **1.30** (**1.14 dB**)
Calculated / Measured **Calculated**

Frequency **689.00 MHz**
Drawing # **TFU-6T130 -VP**





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Location **Bryan, TX**
Customer
Antenna Type **TFU-30GTH/VP-R 6T140**

ELEVATION PATTERN

RMS Gain at Main Lobe	27.00 (14.31 dB)	Beam Tilt	0.75 deg
RMS Gain at Horizontal	18.70 (12.72 dB)	Frequency	689.00 MHz
Calculated / Measured	Calculated	Drawing #	30G270075-90

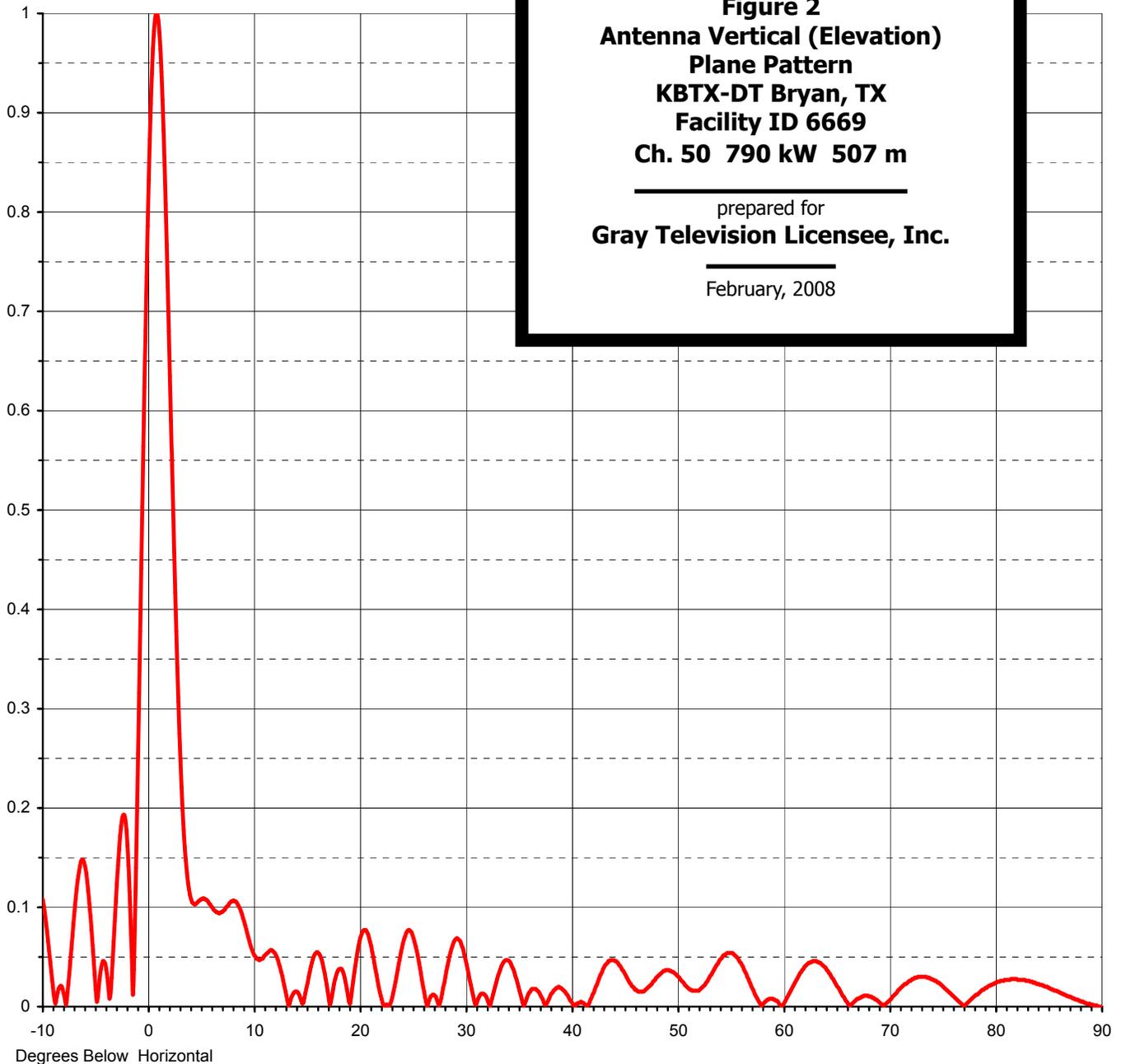


Figure 2
Antenna Vertical (Elevation)
Plane Pattern
KBTX-DT Bryan, TX
Facility ID 6669
Ch. 50 790 kW 507 m

prepared for
Gray Television Licensee, Inc.

February, 2008



Proposal Number **C-01975** Revision: **5**
Date **19-Feb-08**
Call Letters **KBTX-DT** Channel **50**
Location **Bryan, TX**
Customer
Antenna Type **TFU-30GTH/VP-R 6T140**

ELEVATION PATTERN

RMS Gain at Main Lobe	27.00 (14.31 dB)	Beam Tilt	0.75 deg
RMS Gain at Horizontal	18.70 (12.72 dB)	Frequency	689.00 MHz
Calculated / Measured	Calculated	Drawing #	30G270075

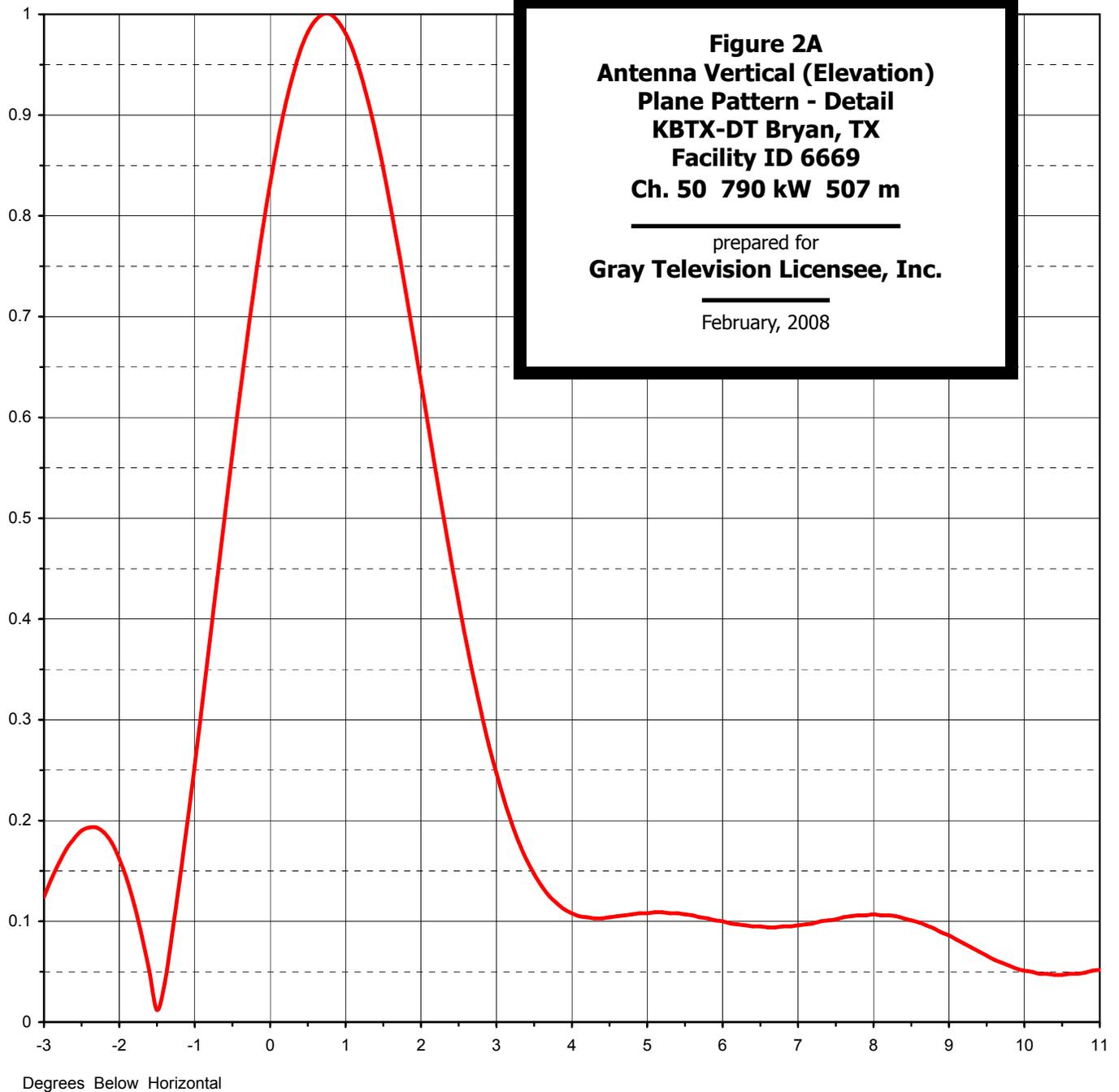
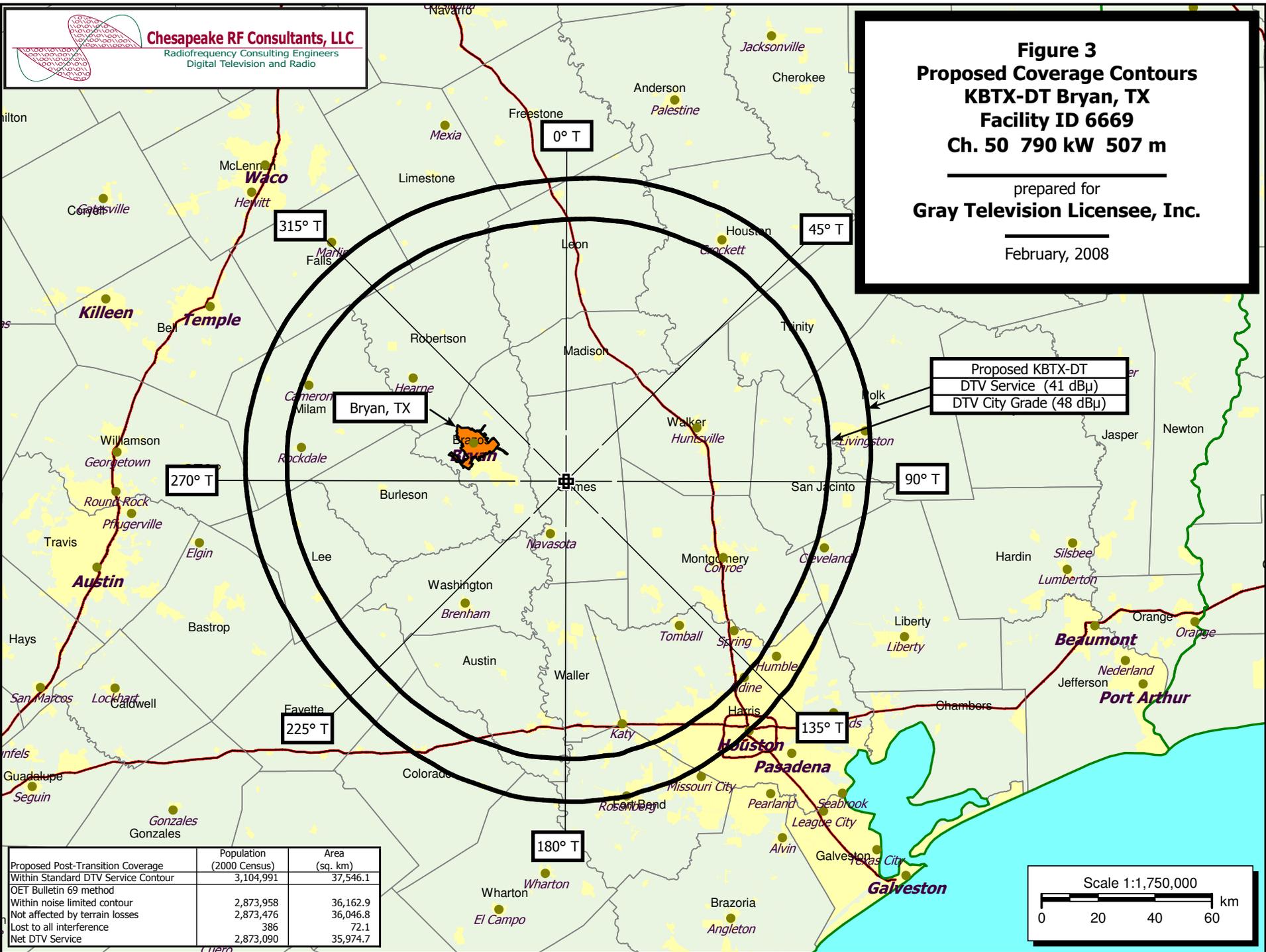


Figure 3
Proposed Coverage Contours
KBTX-DT Bryan, TX
Facility ID 6669
Ch. 50 790 kW 507 m

prepared for
Gray Television Licensee, Inc.

February, 2008



Proposed Post-Transition Coverage	Population (2000 Census)	Area (sq. km)
Within Standard DTV Service Contour	3,104,991	37,546.1
OET Bulletin 69 method		
Within noise limited contour	2,873,958	36,162.9
Not affected by terrain losses	2,873,476	36,046.8
Lost to all interference	386	72.1
Net DTV Service	2,873,090	35,974.7

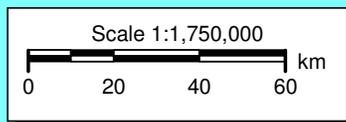


Figure 4
Coverage Contour Comparison
KBTX-DT Bryan, TX
Facility ID 6669
Ch. 50 790 kW 507 m

prepared for
Gray Television Licensee, Inc.

February, 2008

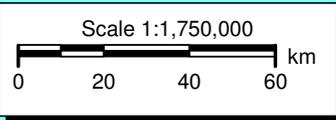
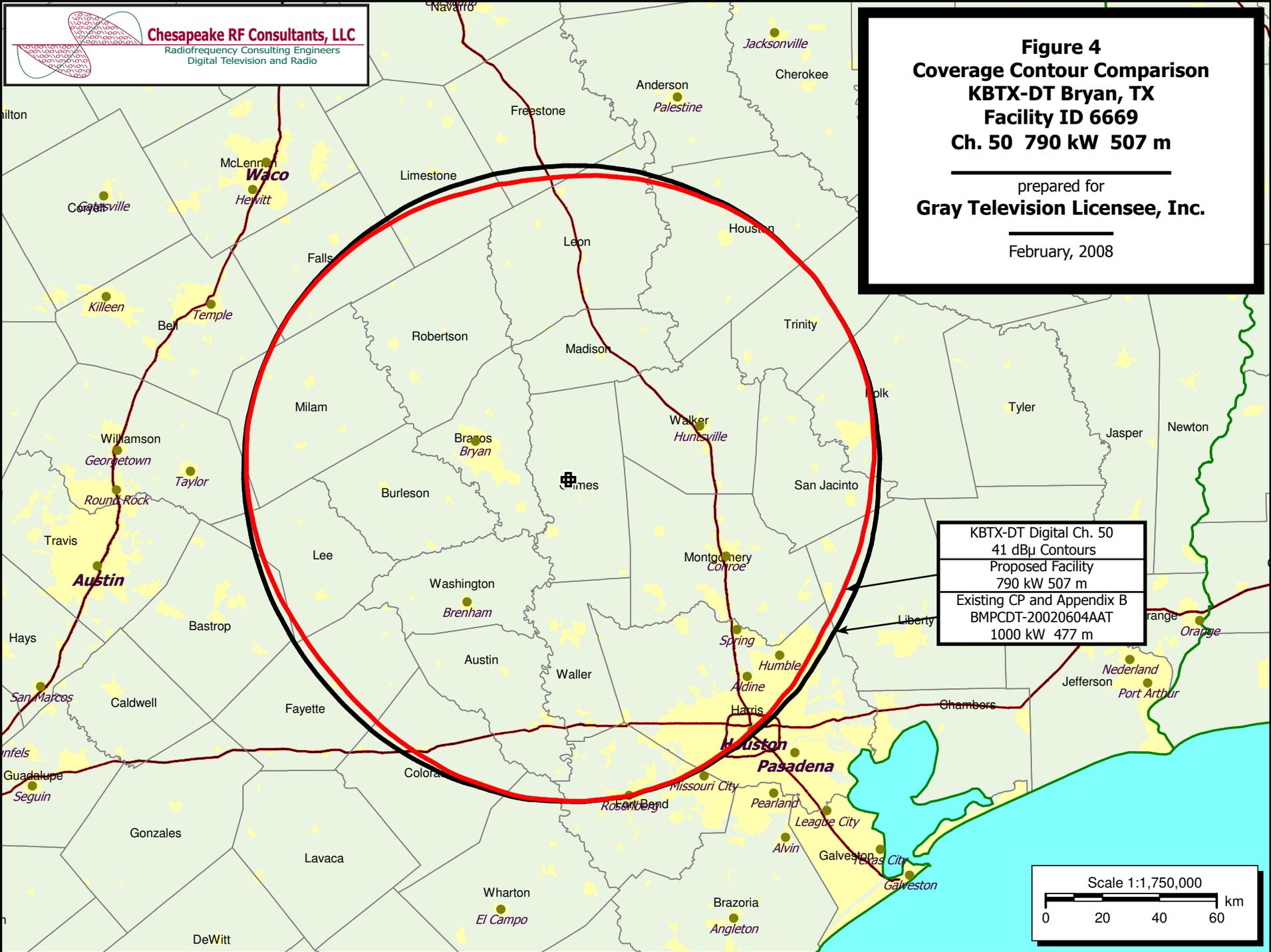


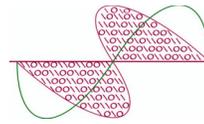
Table 1

**Transition Period
Interference Analysis Results Summary**

prepared for

Gray Television Licensee, Inc.

KBTX-DT Bryan, TX



Chesapeake RF Consultants, LLC

Radiofrequency Consulting Engineers
Digital Television and Radio

Ch.	Call	City/State	Dist (km)	Status	Application Ref. No.	-----Population (1990 Census)-----		
						Baseline	New Interference	Total Interference
47	KTMD	GALVESTON TX	120.3	LIC	BLCT-20040325AET	4,754,497	-189 (0.00%)	n/a
49	KNVA	AUSTIN TX	171.4	CP MOD	BMPCDT-20060623AAC	1,466,178	0 (0.00%)	n/a
49	KNVA-DT	AUSTIN TX	171.4	PLN	DTVPLN-DTVP1432	1,466,178	0 (0.00%)	n/a
49	KNVA	AUSTIN TX	171.4	LIC	BLCDDT-20060721ABF	1,466,178	0 (0.00%)	n/a
49	KPXB	CONROE TX	120.3	CP MOD	BMPCT-20020107AAJ	4,726,520	-2,472 (-0.05%)	n/a
49	KPXB	CONROE TX	81.8	LIC	BLCT-19930427KE	4,726,520	-1,197 (-0.03%)	n/a
50	KLWB	NEW IBERIA LA	389.3	LIC	BLCT-20060316ACO	---	none	n/a
50	KBMT-DT	BEAUMONT TX	209.7	PLN	DTVPLN-DTVP1461	704,324	-3,202 (-0.45%)	n/a
50	KRIS-DT	CORPUS CHRISTI TX	347.9	PLN	DTVPLN-DTVP1462	---	none	n/a
50	KCEN-DT	TEMPLE TX	138.8	PLN	DTVPLN-DTVP1463		<u>See Note 1</u>	
51	KNWS-TV	KATY TX	121.6	LIC	BLCT-19931104KE	4,597,093	0 (0.00%)	n/a
57	KAZH	BAYTOWN TX	120.3	LIC	BLCT-20030418AAX	---	none	n/a

(interference decreases to KTMD, KPXB, and KBMT-DT)

Note 1: Evaluation not required, KCEN-DT was ordered to DTV Channel 9 (MM Docket 01-46)

SECTION III-D - DTV Engineering

Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.

Pre-Transition Certification Checklist: An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to change pre-transition facilities. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

Post-Transition Expedited Processing. An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.

1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:	
(a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.	<input checked="" type="radio"/> Yes <input type="radio"/> No
(b) It will operate a pre-transition facility from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.	<input checked="" type="radio"/> Yes <input type="radio"/> No
(c) It will operate a pre-transition facility with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.	<input type="radio"/> Yes <input checked="" type="radio"/> No
(d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
(e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. Applicant must submit the Exhibit called for in Item 13.	<input checked="" type="radio"/> Yes <input type="radio"/> No
3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community.	<input checked="" type="radio"/> Yes <input type="radio"/> No
4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable.	<input checked="" type="radio"/> Yes <input type="radio"/> No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	<input type="radio"/> Yes <input checked="" type="radio"/> No

SECTION III-D - DTV Engineering

TECHNICAL SPECIFICATIONS
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.

TECH BOX

1. Channel Number: DTV 50 Analog TV, if any 3
2. Zone: <input type="radio"/> I <input type="radio"/> II <input checked="" type="radio"/> III
3. Antenna Location Coordinates: (NAD 27) Latitude: Degrees 30 Minutes 33 Seconds 16 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 96 Minutes 1 Seconds 51 <input checked="" type="radio"/> West <input type="radio"/> East
4. Antenna Structure Registration Number: 1062868 <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Notification filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level: 101.2 meters
6. Overall Tower Height Above Ground Level: 502.9 meters
7. Height of Radiation Center Above Ground Level: 494.7 meters
8. Height of Radiation Center Above Average Terrain : 507.2 meters

9. Maximum Effective Radiated Power (average power): 790 kW

10. Antenna Specifications:

a. Manufacturer DIE Model TFU-30GTH/VP-R 6T140

b. Electrical Beam Tilt:
0.75 degrees Not Applicable

c. Mechanical Beam Tilt:
degrees toward azimuth
degrees True Not Applicable
Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). [Exhibit 42]

d. Polarization:
 Horizontal Circular Elliptical

e. Directional Antenna Relative Field Values: Not applicable (Nondirectional)

[For a composite directional (not off-the-shelf) antenna, press the following button to fill in the relative field values subform.]
[Relative Field Values]

10e. Directional Antenna Relative Field Values

[Fill in this subform for a composite directional (not off-the-shelf) antenna, only.]

e. Directional Antenna Relative Field Values:
Rotation (Degrees): No Rotation

Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
0	0.701	10	0.761	20	0.84	30	0.918	40	0.977	50	1
60	0.981	70	0.925	80	0.848	90	0.768	100	0.706	110	0.681
120	0.701	130	0.761	140	0.84	150	0.918	160	0.977	170	1
180	0.981	190	0.925	200	0.848	210	0.768	220	0.706	230	0.681
240	0.701	250	0.761	260	0.84	270	0.918	280	0.977	290	1
300	0.981	310	0.925	320	0.848	330	0.768	340	0.706	350	0.681
Additional Azimuths											

Relative Field Polar Plot

If a directional antenna is proposed, the requirements of 47 C.F.R. Sections 73.625(c) must be satisfied. **Exhibit required.** [Exhibit 43]

11. Does the proposed facility satisfy the pre-transition interference protection provisions of 47 C.F.R. Section 73.623(a) (Applicable only if **Certification Checklist** Items 1(a), (b), or (c) are answered "No.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616? Yes No [Exhibit 44]

If "No," attach as an Exhibit justification therefor, including a summary of any related previously granted waivers.

12. If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if **Certification Checklist** item 3 is answered "No.") [Exhibit 45]

13. **Environmental Protection Act. Submit in an Exhibit** the following: [Exhibit 46]
If **Certification Checklist** Item 2 is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.

By checking "Yes" to **Certification Checklist** Item 2, 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.

If **Certification Checklist** Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R Section 1.1311.

PREPARERS CERTIFICATION ON SECTION III 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 02/26/2008	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC 11993 KAHNS ROAD		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20112 -
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).
