

## **ENGINEERING EXHIBIT**

### **Application for Post-Transition Digital Television Station Construction Permit**

prepared for

#### **Esteem Broadcasting of North Carolina LLC**

WYDO-DT Greenville, NC

Facility ID 35582

Ch. 14 47 kW 210 m

*Esteem Broadcasting of North Carolina LLC* (“*Esteem*”) is the licensee of television station WYDO(TV), analog Channel 14, Greenville, NC. The companion Channel 21 digital facility is currently operating pursuant to Special Temporary Authority. *Esteem* herein proposes construction of the WYDO-DT post-transition digital facility on Channel 14. This channel was established in Appendix B of the Seventh Report and Order in MB Docket 87-278.

The instant proposal specifies an effective radiated power (“ERP”) of 47 kW at 210 meters antenna height above average terrain (“HAAT”), with the directional antenna presently licensed for the analog Channel 14 facility. The proposed coverage contour does not exceed the Appendix B parameters of 50 kW ERP and 205 meters HAAT. The Appendix B parameters were based on carry-over of WYDO-DT’s authorized but unbuilt transitional digital Channel 14 facility (BPCDT-19991101AHL), which would utilize a non-directional antenna pattern. The proposed 47 kW ERP is the maximum ERP with the existing Channel 14 antenna which can be employed without exceeding the Appendix B facility. Since no extension in contour location beyond that of the allotment will result, interference analysis to other television facilities is not required.

The proposed antenna is a horizontally polarized Andrew model ALP32M3-HSP-14. The directional antenna’s azimuthal pattern is depicted in **Figure 1**. **Figures 2** and **2A** provide the theoretical vertical plane (elevation) pattern<sup>1</sup>. The antenna is top-mounted on the existing WYDO

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<sup>1</sup> 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.

antenna supporting structure, having FCC Antenna Structure Registration number 1002798. No change to the overall structure height and no tower work are required to carry out this proposal.

A map is supplied as **Figure 3**, which depicts the standard predicted coverage contours. This map includes the boundaries of Greenville, WYDO-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 $\mu$  contour.

The proposed WYDO-DT facility's predicted service population provides a 95.1 percent match of the Appendix B facility, as detailed in the table below.

Population Summary (2000 Census) OET Bulletin 69 method	Appendix B	Proposed
Within Noise Limited Contour	649,763	617,575
Not affected by terrain losses	649,763	617,575
Lost to all interference	119	0
Net DTV Service	<b>649,644</b>	<b>617,575</b>
Match of Appendix B	---	<b>95.06%</b>

### **Other Allocation Considerations**

The nearest FCC monitoring station is 416 km distant at Laurel, MD. 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). 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 requiring international coordination.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposal will involve use of an existing transmitting antenna. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. No tower construction or change in

structure height is proposed. Therefore, 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 30 percent antenna relative field in downward elevations (pattern data shows less than 30 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  $3.4 \mu\text{W}/\text{cm}^2$ , which is 1.1 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.  
March 26, 2008

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

### List of Attachments

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

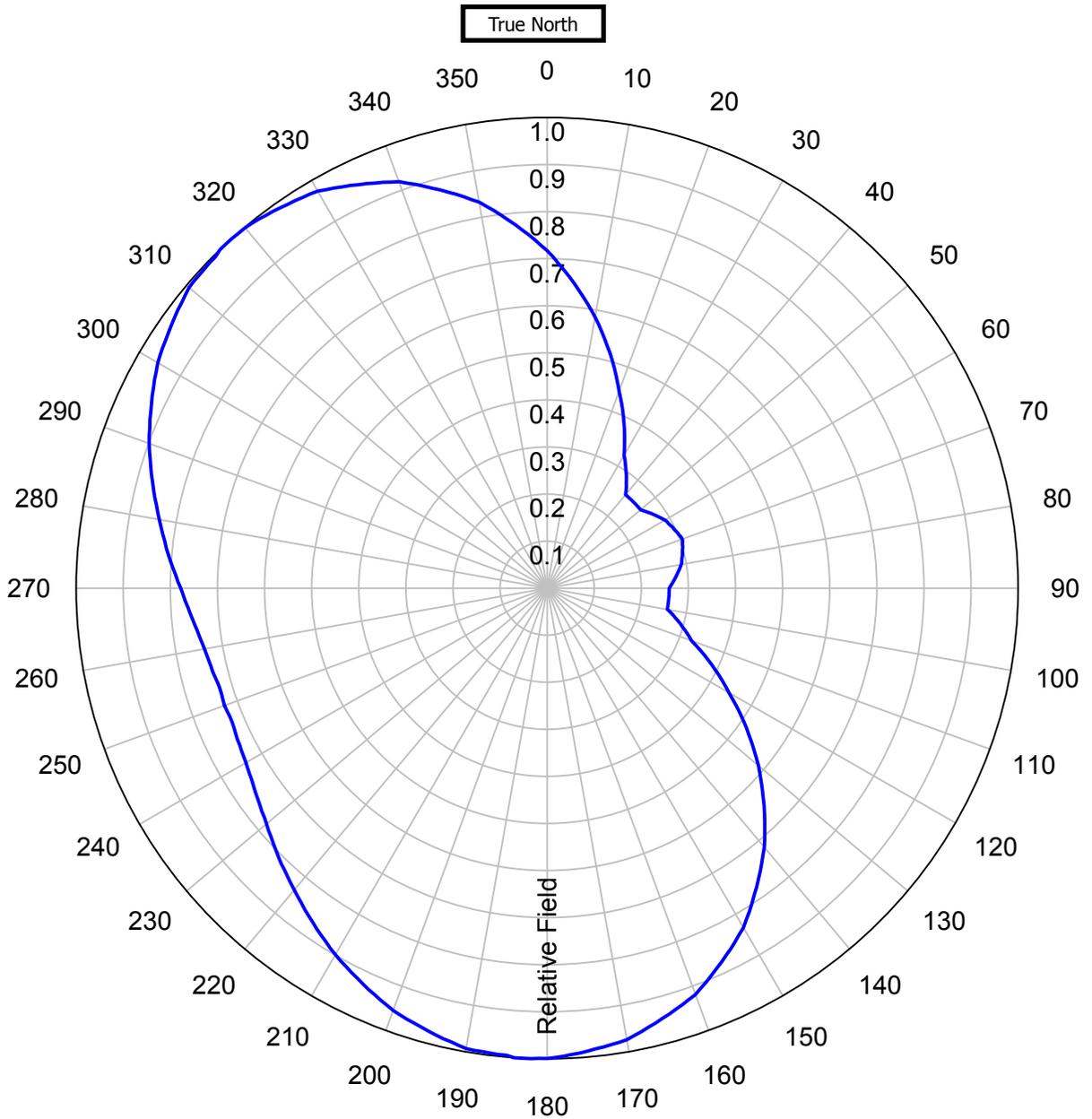
*This material was entered March 26, 2008 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

**Figure 1**  
**Antenna Horizontal**  
**Plane Pattern**

**AZIMUTH PATTERN**

Type: ALP-P  
Numeric 1.88 dBd 2.74  
Directivity:  
Peak(s) at:

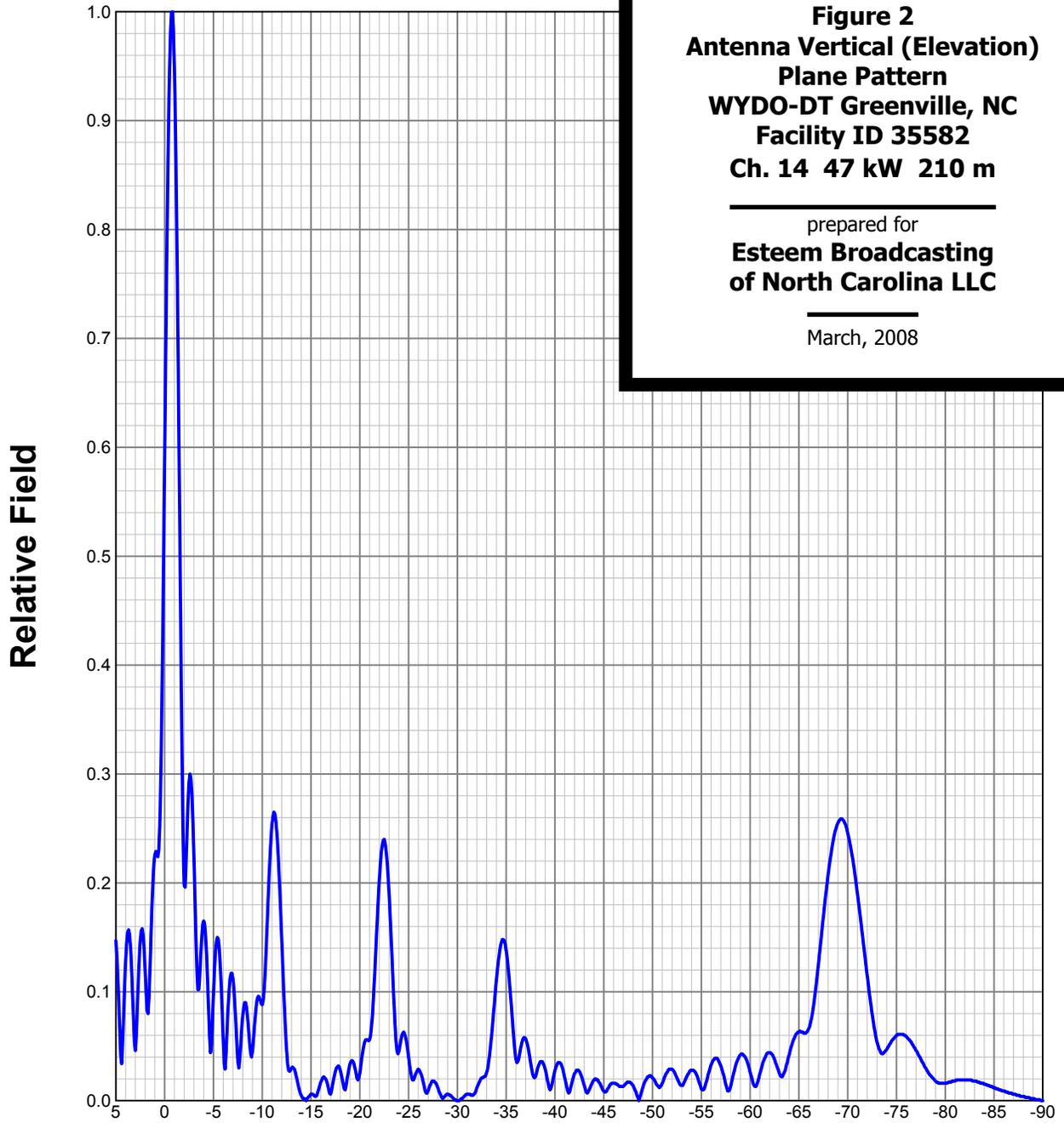
Channel: 14  
Location:  
Polarization: Horizontal  
Note: Pattern shape and directivity may vary with channel and mouting configuration.



## ELEVATION PATTERN

Type: ALP32M3  
Directivity: Numeric dBd  
Main Lobe: 31.93 15.04  
Horizontal: 11.15 10.47

Channel: 14  
Location: \_\_\_\_\_  
Beam Tilt: -0.75  
Polarization: Horizontal



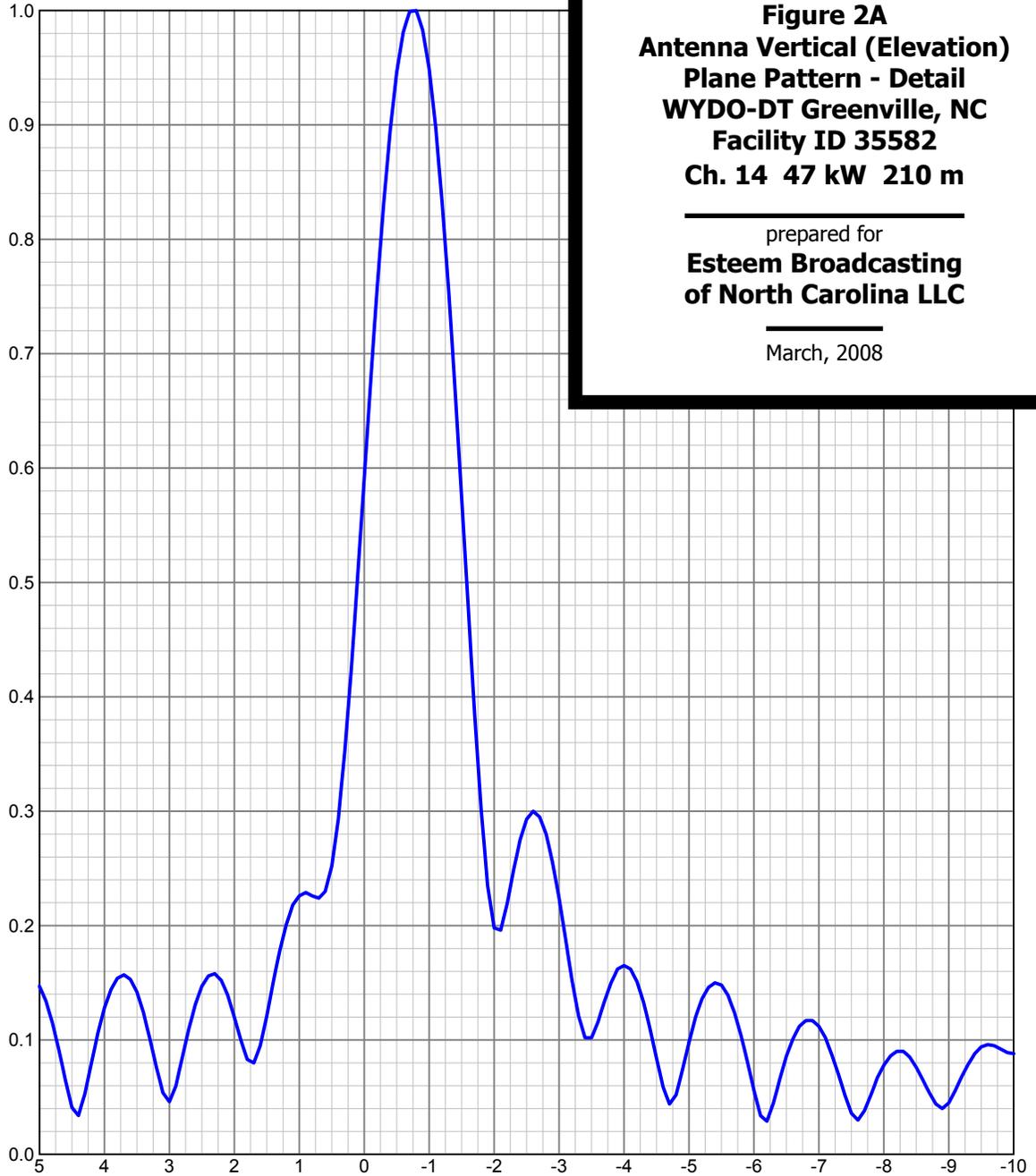
**Figure 2**  
**Antenna Vertical (Elevation)**  
**Plane Pattern**  
**WYDO-DT Greenville, NC**  
**Facility ID 35582**  
**Ch. 14 47 kW 210 m**  
\_\_\_\_\_  
prepared for  
**Esteem Broadcasting**  
**of North Carolina LLC**  
\_\_\_\_\_  
March, 2008

# ELEVATION PATTERN

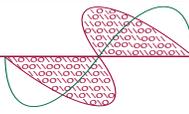
Type: ALP32M3  
Directivity: Numeric dBd  
Main Lobe: 31.93 15.04  
Horizontal: 11.15 10.47

Channel: 14  
Location: \_\_\_\_\_  
Beam Tilt: -0.75  
Polarization: Horizontal

Relative Field



**Figure 2A**  
**Antenna Vertical (Elevation)**  
**Plane Pattern - Detail**  
**WYDO-DT Greenville, NC**  
**Facility ID 35582**  
**Ch. 14 47 kW 210 m**  
\_\_\_\_\_  
prepared for  
**Esteem Broadcasting**  
**of North Carolina LLC**  
\_\_\_\_\_  
March, 2008

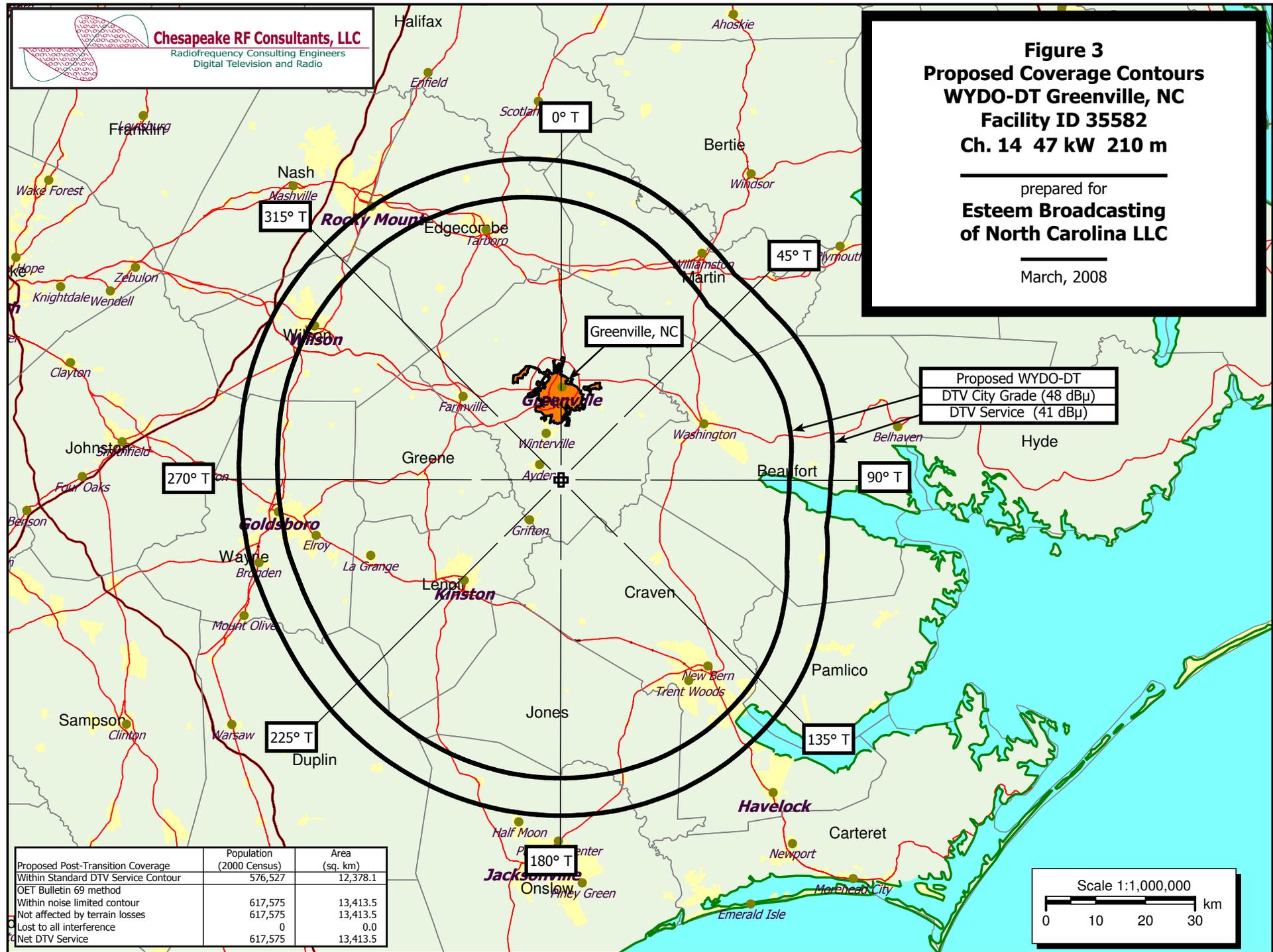


**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

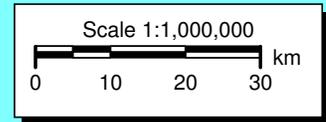
**Figure 3**  
**Proposed Coverage Contours**  
**WYDO-DT Greenville, NC**  
**Facility ID 35582**  
**Ch. 14 47 kW 210 m**

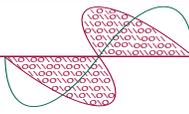
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	Population (2000 Census)	Area (sq. km)
Proposed Post-Transition Coverage		
Within Standard DTV Service Contour	576,527	12,378.1
OET Bulletin 69 method		
Within noise limited contour	617,575	13,413.5
Not affected by terrain losses	617,575	13,413.5
Lost to all interference	0	0.0
Net DTV Service	617,575	13,413.5

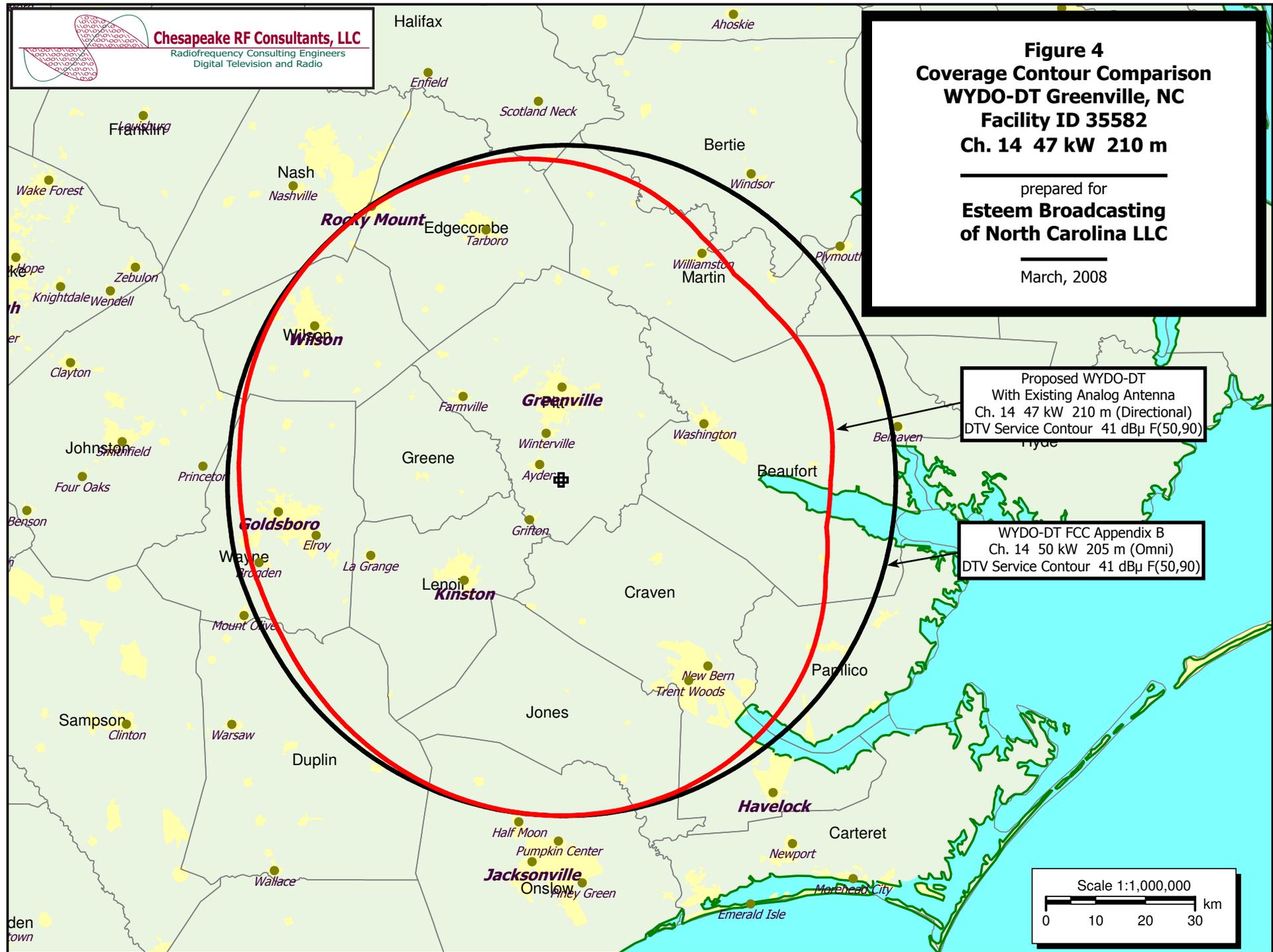




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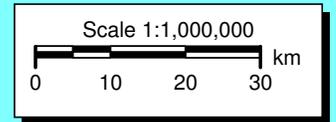
**Figure 4**  
**Coverage Contour Comparison**  
**WYDO-DT Greenville, NC**  
**Facility ID 35582**  
**Ch. 14 47 kW 210 m**

prepared for  
**Esteem Broadcasting**  
**of North Carolina LLC**  
 March, 2008



Proposed WYDO-DT  
 With Existing Analog Antenna  
 Ch. 14 47 kW 210 m (Directional)  
 DTV Service Contour 41 dBμ F(50,90)

WYDO-DT FCC Appendix B  
 Ch. 14 50 kW 205 m (Omni)  
 DTV Service Contour 41 dBμ F(50,90)



SECTION III-D - DTV Engineering	
<b>Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.</b>	
<p><b>Pre-Transition Certification Checklist:</b> 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.</p> <p><b>Post-Transition Expedited Processing.</b> 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.</p>	
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 type="radio"/> Yes <input checked="" 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 <b>submit the Exhibit</b> 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 checked="" type="radio"/> Yes <input type="radio"/> No

SECTION III-D - DTV Engineering	
<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 Number:	DTV 14 Analog TV, if any 14
2. Zone:	<input type="radio"/> I <input checked="" type="radio"/> II <input type="radio"/> III
3. Antenna Location Coordinates: (NAD 27)	Latitude: Degrees 35 Minutes 26 Seconds 42 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 77 Minutes 22 Seconds 08 <input checked="" type="radio"/> West <input type="radio"/> East
4. Antenna Structure Registration Number: 1002798	<input type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level:	13.4 meters
6. Overall Tower Height Above Ground Level:	220.7 meters
7. Height of Radiation Center Above Ground Level:	207 meters
8. Height of Radiation Center Above Average Terrain :	210.1 meters

9. Maximum Effective Radiated Power (average power): 47 kW

10. Antenna Specifications:

a. Manufacturer AND Model ALP32M3-HSP-14

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	0.717	10	0.585	20	0.446	30	0.326	40	0.259	50	0.259
60	0.289	70	0.305	80	0.289	90	0.259	100	0.259	110	0.326
120	0.446	130	0.585	140	0.717	150	0.833	160	0.919	170	0.974
180	0.999	190	0.993	200	0.955	210	0.899	220	0.836	230	0.778
240	0.739	250	0.729	260	0.739	270	0.778	280	0.836	290	0.899
300	0.955	310	0.993	320	0.999	330	0.974	340	0.919	350	0.833
Additional Azimuths		183	1	317	1						

[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 3/26/2008	
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).

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Any specified rotation has already been applied to the plotted pattern.  
Field strength values shown on a rotated pattern may differ from the listed values because intermediate azimuths are interpolated between entered azimuths.

