

## **ENGINEERING EXHIBIT**

### **Application for Construction Permit**

prepared for

#### **Television Station WWHB LLC**

WWHB-CA Stuart, FL

Facility ID 63557

Ch. 48 60 kW

*Television Station WWHB LLC* (“*WWHB*”) is the licensee of Class A Television station WWHB-CA, Channel 48, Stuart, Facility ID 63557 (BLTTA-20021106ABQ). WWHB-CA employs a directional transmitting antenna in common with WTCN-CA (Ch. 43, Palm Beach, FL), licensed to *Television Station WTCN LLC* under common control with WWHB-CA.

Recent inspections of the common antenna system revealed damage to components of the antenna, most probably sustained during severe weather. Further investigation indicated that the directional pattern of the antenna might not have conformed to the licensed directional patterns of WWHB-CA and WTCN-CA. As this panel antenna is no longer supported by its supplier, and the available directional pattern data is inconsistent, the licensee evaluated use of a new, replacement antenna system. This option was thwarted by structural loading issues with the tower on which the antenna is mounted. Subsequently, the licensee contracted with Dielectric Communications to evaluate and repair the existing antenna system to assure compliance with the licensed parameters of both stations. Unfortunately, the calculated pattern of the repaired antenna could not be made to suppress the station’s signal as tightly as the licensed pattern requires to the east, resulting in some contour extension along azimuths towards the Atlantic Ocean. This contour extension would not comply with the Commission’s August 3, 2004 “freeze” concerning expansion in service area.<sup>1</sup>

*WWHB* seeks a Construction Permit herein to modify WWHB-CA to employ the slightly modified antenna pattern utilizing the current antenna system as repaired by Dielectric. The licensed directional pattern has a sharp suppression towards the east in between the major lobes which are

---

<sup>1</sup>*Public Notice* “Freeze on the Filing of Certain TV and DTV Requests for Allotment or Service Area Changes,” DA 04-2446, released August 3, 2004.

oriented north and south along the Florida coastline. The licensed pattern minimum brings the protected contour nearly to the transmitter site. **Figure 1** depicts a contour comparison of the licensed and proposed WWHB-CA facilities. Although the proposed Class A station protected contour encompasses new land area, the involved land area is otherwise totally bounded by the existing Class A protected contour and the ocean. **Figure 2** provides the proposed directional antenna's azimuth pattern and associated data.

A waiver of the August 3, 2004 freeze is requested due to the extension in protected contour. The proposed contour extension would involve land area which is completely bounded by the existing contour and the ocean, resulting in negligible preclusive effect. The site is less than 5 miles from the ocean. In all other directions (up and down along the coast, as well as towards inland areas) there would be no contour extension.

Further, as due diligence, representatives of the licensee have determined that the as-built antenna radiation center height is 2.4 meters below the licensed value. While this is within the permitted tolerance (+2 and -4 meters), the actual antenna elevation is specified herein for consistency. The instant proposal also specifies a one-second coordinate correction to conform to the associated Antenna Structure Registration (# 1018573). Licensed and proposed parameters are supplied below.

<b><u>Facility Data</u></b>	<b><u>Licensed</u></b>	<b><u>Proposed</u></b>
Coordinates (NAD-27)	27° 01' 32" N-Lat 80° 10' 43" W-Lon	27° 01' 31" N-Lat 80° 10' 43" W-Lon
Antenna C/R height AGL	273.7 m	271.3 m

Thus, the instant proposal modifies the licensed facility by specifying changes in the directional antenna pattern, a reduction in antenna height, and a one-second correction in coordinates. The antenna is side-mounted and no change in overall structure height or maximum effective radiated power will result. A request for *Special Temporary Authorization* is being filed contemporaneously with the instant application, to authorize use of the facilities specified herein.

## **Allocation Considerations**

The instant proposal complies with the Commission's standard contour overlap protection requirements towards all NTSC, television translator, LPTV, and Class A stations except those summarized in **Table 1**. A detailed interference study was conducted in accordance with the terrain dependent Longley-Rice point-to-point propagation model, per the Commission's Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69")<sup>2</sup>. The interference study examined the change in interference as experienced by the stations subject to overlap that would result from the proposed facility, as well as any pertinent DTV facilities. The results, summarized in **Table 1**, show that any new interference does not exceed the Commission's 0.5 percent rounding tolerance.

Accordingly, the instant proposal complies with §§73.6011 – 73.6014 regarding interference protection to analog and digital television, low power television, television translator, and Class A television facilities.

The nearest FCC monitoring station is at Vero Beach, FL, at a distance of 78.6 km from the site. As provided in §73.1030(c), the predicted F(50,50) 10 mV/m (80 dBμ) signal level resulting from the proposed operation falls well short of the monitoring station location, so no further consideration should be necessary. The site is 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 Zone in Boulder County, Colorado is not required. There are authorized no AM broadcast stations located within 3.2 km (2 miles) of the proposed site, according to information extracted from the Commission's engineering database.<sup>3</sup> The site is located well beyond the border zones that would trigger international coordination.

---

<sup>2</sup>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.

<sup>3</sup>An application is pending (BNP-20040130BCN) for a new directional AM station on 1110 kHz at Palm Beach Gardens, FL. However this facility has not been authorized and therefore should not result in a pattern disturbance

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

The transmitting antenna is side-mounted on an existing antenna support structure. 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 change in structure height is proposed, thus no change in current structure marking and lighting requirements is anticipated. 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 20 percent antenna relative field in downward elevations (pattern data shows less than 20 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  $0.6 \mu\text{W}/\text{cm}^2$ , which is 0.1 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.

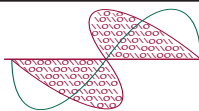
Joseph M. Davis, P.E.  
June 7, 2007

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

## List of Attachments

Figure 1      Coverage Contour Comparison  
Figure 2      Proposed Directional Antenna Pattern  
Table 1      Interference Analysis Results Summary  
Form 301-CA   Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered June 7, 2007 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.*



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

**Figure 1**  
**Coverage Contour Comparison**  
**WWHB-CA Stuart, FL**  
**Facility ID 63557**  
**Ch. 48 60 kW**

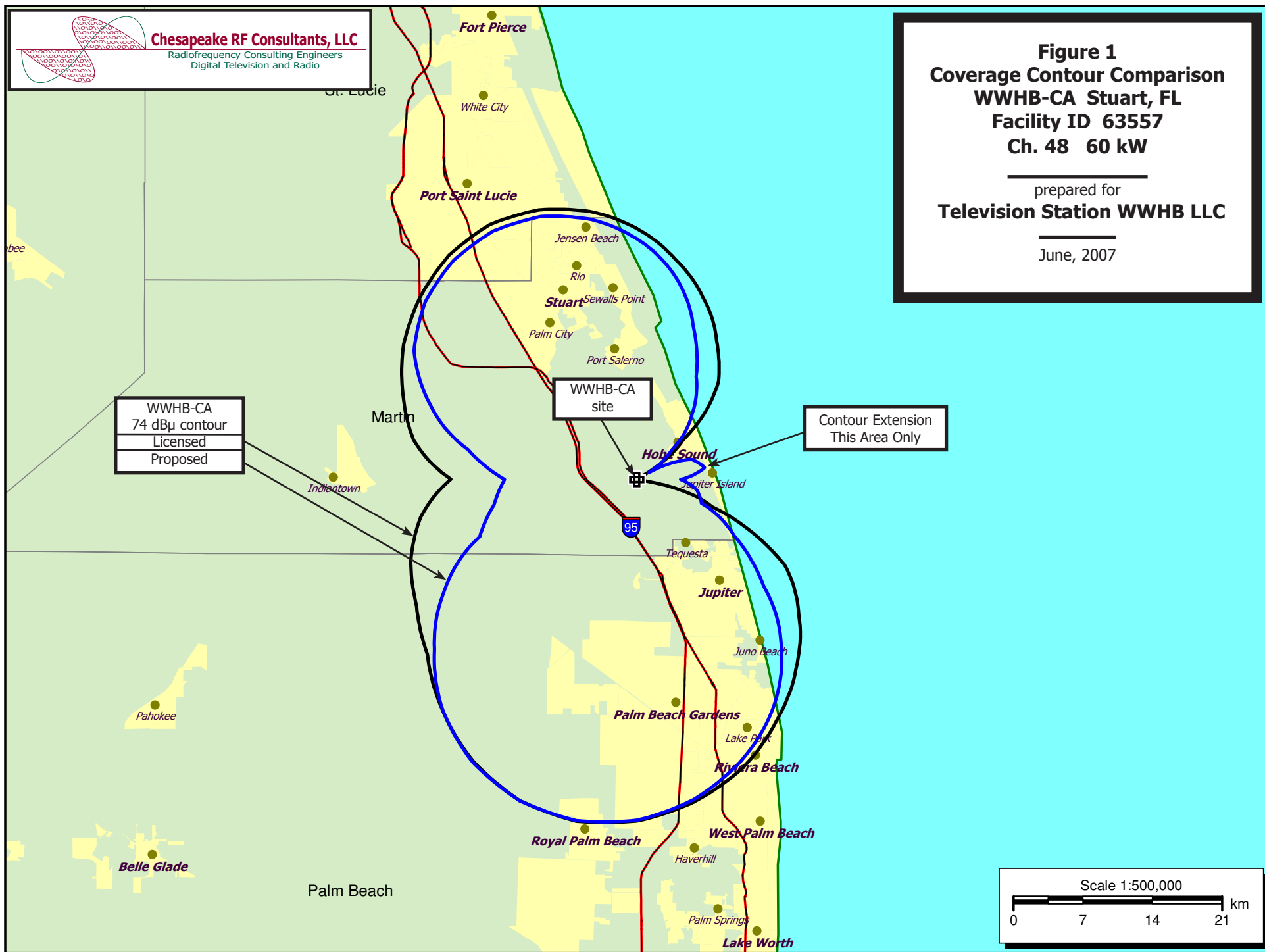
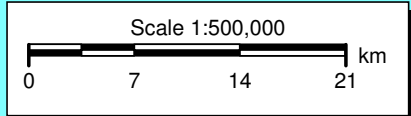
prepared for  
**Television Station WWHB LLC**

June, 2007

WWHB-CA  
74 dBu contour  
Licensed  
Proposed

WWHB-CA  
site

Contour Extension  
This Area Only



**Figure 2**  
**Antenna Horizontal Plane Pattern**  
(page 1 of 2)

Proposal Number  
Date  
Call Letters  
Location  
Customer  
Antenna Type

**C-00891**

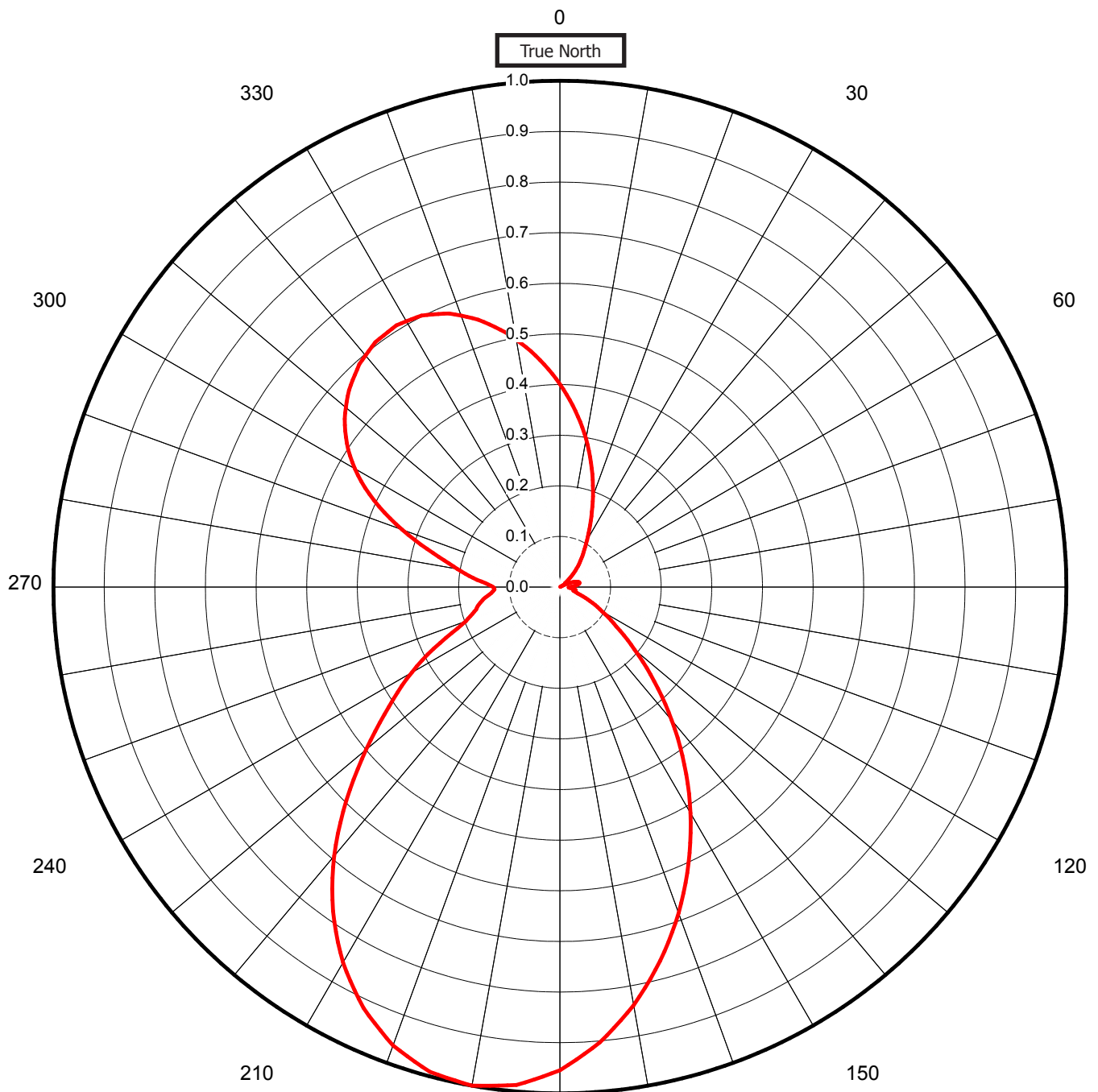
**WWHB** Channel  
**Palm Beach, FL**

**SP-UP-WTCN Antenna M**

**AZIMUTH PATTERN**

Gain **4.30** **( 6.33 dB)**  
Calculated / Measured **Calculated**

Frequency **677.00 MHz**  
Drawing # **ATU-P2SP-6770**





**Figure 2**  
**Antenna Horizontal Plane Pattern**  
 (page 2 of 2)

Proposal Number

**C-00891**

Date

Call Letters

**WWHB**

Channel

**48**

Location

**Palm Beach, FL**

Customer

Antenna Type

**SP-UP-WTCN Antenna Mod**

## TABULATION OF AZIMUTH PATTERN

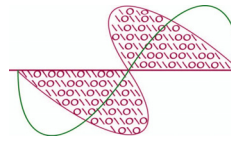
Azimuth Pattern Drawing #: **ATU-P2SP-6770**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.401	45	0.037	90	0.019	135	0.263	180	0.954	225	0.596	270	0.132	315	0.578
1	0.391	46	0.033	91	0.018	136	0.279	181	0.961	226	0.577	271	0.136	316	0.583
2	0.380	47	0.029	92	0.017	137	0.295	182	0.967	227	0.557	272	0.141	317	0.587
3	0.370	48	0.025	93	0.017	138	0.311	183	0.974	228	0.537	273	0.147	318	0.592
4	0.360	49	0.023	94	0.018	139	0.327	184	0.981	229	0.518	274	0.155	319	0.595
5	0.349	50	0.020	95	0.020	140	0.343	185	0.987	230	0.499	275	0.164	320	0.597
6	0.339	51	0.017	96	0.022	141	0.360	186	0.990	231	0.481	276	0.172	321	0.600
7	0.329	52	0.015	97	0.024	142	0.377	187	0.992	232	0.463	277	0.180	322	0.603
8	0.318	53	0.012	98	0.027	143	0.394	188	0.995	233	0.445	278	0.188	323	0.606
9	0.308	54	0.012	99	0.029	144	0.411	189	0.997	234	0.429	279	0.197	324	0.606
10	0.297	55	0.012	100	0.031	145	0.428	190	1.000	235	0.412	280	0.206	325	0.607
11	0.286	56	0.012	101	0.031	146	0.446	191	0.998	236	0.397	281	0.214	326	0.607
12	0.275	57	0.012	102	0.030	147	0.464	192	0.996	237	0.382	282	0.224	327	0.608
13	0.264	58	0.011	103	0.029	148	0.481	193	0.995	238	0.368	283	0.234	328	0.609
14	0.253	59	0.008	104	0.028	149	0.498	194	0.993	239	0.353	284	0.246	329	0.608
15	0.243	60	0.004	105	0.028	150	0.516	195	0.991	240	0.338	285	0.259	330	0.606
16	0.232	61	0.001	106	0.030	151	0.533	196	0.986	241	0.323	286	0.273	331	0.605
17	0.221	62	0.003	107	0.032	152	0.550	197	0.980	242	0.308	287	0.287	332	0.603
18	0.211	63	0.007	108	0.034	153	0.567	198	0.975	243	0.293	288	0.302	333	0.602
19	0.201	64	0.010	109	0.036	154	0.584	199	0.969	244	0.277	289	0.316	334	0.598
20	0.191	65	0.014	110	0.038	155	0.601	200	0.964	245	0.261	290	0.331	335	0.594
21	0.181	66	0.017	111	0.044	156	0.618	201	0.954	246	0.247	291	0.347	336	0.590
22	0.171	67	0.021	112	0.049	157	0.635	202	0.945	247	0.232	292	0.361	337	0.587
23	0.161	68	0.024	113	0.055	158	0.652	203	0.936	248	0.218	293	0.376	338	0.583
24	0.153	69	0.027	114	0.060	159	0.668	204	0.927	249	0.207	294	0.391	339	0.577
25	0.145	70	0.029	115	0.065	160	0.685	205	0.917	250	0.198	295	0.405	340	0.571
26	0.136	71	0.032	116	0.072	161	0.701	206	0.905	251	0.192	296	0.418	341	0.565
27	0.128	72	0.034	117	0.078	162	0.717	207	0.893	252	0.186	297	0.432	342	0.558
28	0.120	73	0.036	118	0.084	163	0.733	208	0.881	253	0.181	298	0.444	343	0.552
29	0.114	74	0.037	119	0.090	164	0.749	209	0.869	254	0.176	299	0.456	344	0.545
30	0.107	75	0.038	120	0.096	165	0.765	210	0.856	255	0.171	300	0.467	345	0.537
31	0.101	76	0.039	121	0.105	166	0.779	211	0.842	256	0.169	301	0.478	346	0.529
32	0.095	77	0.039	122	0.112	167	0.794	212	0.827	257	0.166	302	0.488	347	0.522
33	0.088	78	0.039	123	0.120	168	0.809	213	0.812	258	0.163	303	0.498	348	0.514
34	0.084	79	0.039	124	0.128	169	0.824	214	0.797	259	0.160	304	0.507	349	0.505
35	0.080	80	0.038	125	0.136	170	0.838	215	0.781	260	0.156	305	0.516	350	0.496
36	0.075	81	0.037	126	0.147	171	0.851	216	0.764	261	0.153	306	0.524	351	0.487
37	0.071	82	0.036	127	0.159	172	0.864	217	0.747	262	0.149	307	0.532	352	0.478
38	0.066	83	0.034	128	0.170	173	0.877	218	0.729	263	0.144	308	0.539	353	0.469
39	0.062	84	0.032	129	0.181	174	0.890	219	0.711	264	0.140	309	0.546	354	0.460
40	0.058	85	0.030	130	0.193	175	0.903	220	0.693	265	0.136	310	0.552	355	0.450
41	0.054	86	0.028	131	0.206	176	0.913	221	0.674	266	0.134	311	0.558	356	0.440
42	0.050	87	0.025	132	0.221	177	0.923	222	0.655	267	0.131	312	0.564	357	0.431
43	0.045	88	0.023	133	0.235	178	0.934	223	0.635	268	0.129	313	0.570	358	0.421
44	0.041	89	0.021	134	0.249	179	0.944	224	0.616	269	0.130	314	0.574	359	0.411



Table 1

**Interference Analysis Results Summary**  
**Television Station WWHB LLC**  
**WWHB-CA Stuart, FL**



**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

<u>Ch.</u>	<u>Call</u>	<u>City/State</u>	<u>Dist</u>	<u>Status</u>	<u>Application Ref. No.</u>	<u>---Population (1990 Census)---</u>	
			<u>(km)</u>			<u>Baseline</u>	<u>New Interference</u>
33	WBFS-TV	MIAMI FL	117.6	LIC	BLCT-19850125KE	---	none
34	WTVX	FORT PIERCE FL	23.5	LIC	BMLCT-20040930AKO	---	none
48	WOPX	MELBOURNE FL	151.0	LIC	BLCDT-20020510AAH	2,116,888	514 (0.02%)
48	WOPX	MELBOURNE FL	151.0	PLN	DTVPLN-DTVP1387	2,116,888	538 (0.03%)
48	WFUN-LP	MIAMI FL	115.5	CP MOD	BMP TTL-20070413AFE	---	none
48	WFUN-LP	MIAMI FL	115.5	CP MOD	BMPD TL-20070423ABK	---	none
48	WFUN-LP	MIAMI, ETC. FL	117.6	LIC	BL TTL-19981214JB	---	none
49	WFGC	PALM BEACH FL	29.3	LIC	BLC DT-20060627ABB	---	none
49	WFGC-DT	PALM BEACH FL	29.3	PLN	DTVPLN-DTVP1415	---	none

Section III - Engineering (Analog)																																																																																																											
TECHNICAL SPECIFICATIONS																																																																																																											
Ensure that the specifications below are accurate. All items must be completed. The response "on file" is not acceptable.																																																																																																											
<b>NOTE:</b> 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.																																																																																																											
TECH BOX																																																																																																											
1.	Channel: 48																																																																																																										
2.	Frequency Offset: <input type="radio"/> No offset <input type="radio"/> Zero offset <input type="radio"/> Plus offset <input checked="" type="radio"/> Minus offset																																																																																																										
3.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 27 Minutes 01 Seconds 31 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 80 Minutes 10 Seconds 43 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																										
4.	Antenna Structure Registration Number: 1018573 <input type="checkbox"/> Not Applicable [Exhibit 5] <input type="checkbox"/> Notification filed with FAA																																																																																																										
5.	Antenna Location Site Elevation Above Mean Sea Level: 4.9 meters																																																																																																										
6.	Overall Tower Height Above Ground Level: 311.5 meters																																																																																																										
7.	Height of Radiation Center Above Ground Level: 271.3 meters																																																																																																										
8.	Maximum Effective Radiated Power (ERP) Towards Radio Horizon: 60 kW																																																																																																										
9.	Maximum ERP in any Horizontal and Vertical Angle: 60 kW																																																																																																										
10.	Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under <a href="http://svartifoss2.fcc.gov/prod/cdbforms/pubacc/prod/cdb_pa.htm">CDBS Public Access</a> (http://svartifoss2.fcc.gov/prod/cdbforms/pubacc/prod/cdb_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 type="radio"/> Nondirectional <input type="radio"/> Directional "Off-the-shelf" <input checked="" type="radio"/> Directional composite  Manufacturer SUP Model UP-10-SPN																																																																																																										
Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Directional "Off-the-shelf") Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation																																																																																																											
<table border="1"><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>0.401</td><td>10</td><td>0.297</td><td>20</td><td>0.191</td><td>30</td><td>0.107</td><td>40</td><td>0.058</td><td>50</td><td>0.020</td></tr><tr><td>60</td><td>0.004</td><td>70</td><td>0.029</td><td>80</td><td>0.038</td><td>90</td><td>0.019</td><td>100</td><td>0.031</td><td>110</td><td>0.038</td></tr><tr><td>120</td><td>0.096</td><td>130</td><td>0.193</td><td>140</td><td>0.343</td><td>150</td><td>0.516</td><td>160</td><td>0.685</td><td>170</td><td>0.838</td></tr><tr><td>180</td><td>0.954</td><td>190</td><td>1</td><td>200</td><td>0.964</td><td>210</td><td>0.856</td><td>220</td><td>0.693</td><td>230</td><td>0.499</td></tr><tr><td>240</td><td>0.338</td><td>250</td><td>0.198</td><td>260</td><td>0.156</td><td>270</td><td>0.132</td><td>280</td><td>0.206</td><td>290</td><td>0.331</td></tr><tr><td>300</td><td>0.467</td><td>310</td><td>0.552</td><td>320</td><td>0.597</td><td>330</td><td>0.606</td><td>340</td><td>0.571</td><td>350</td><td>0.496</td></tr><tr><td colspan="2">Additional Azimuths</td><td>328</td><td>0.609</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>												Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	0	0.401	10	0.297	20	0.191	30	0.107	40	0.058	50	0.020	60	0.004	70	0.029	80	0.038	90	0.019	100	0.031	110	0.038	120	0.096	130	0.193	140	0.343	150	0.516	160	0.685	170	0.838	180	0.954	190	1	200	0.964	210	0.856	220	0.693	230	0.499	240	0.338	250	0.198	260	0.156	270	0.132	280	0.206	290	0.331	300	0.467	310	0.552	320	0.597	330	0.606	340	0.571	350	0.496	Additional Azimuths		328	0.609								
Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value																																																																																																
0	0.401	10	0.297	20	0.191	30	0.107	40	0.058	50	0.020																																																																																																
60	0.004	70	0.029	80	0.038	90	0.019	100	0.031	110	0.038																																																																																																
120	0.096	130	0.193	140	0.343	150	0.516	160	0.685	170	0.838																																																																																																
180	0.954	190	1	200	0.964	210	0.856	220	0.693	230	0.499																																																																																																
240	0.338	250	0.198	260	0.156	270	0.132	280	0.206	290	0.331																																																																																																
300	0.467	310	0.552	320	0.597	330	0.606	340	0.571	350	0.496																																																																																																
Additional Azimuths		328	0.609																																																																																																								

[Relative Field Polar Plot](#)

#### CERTIFICATION

11.	<b>Interference</b> : The proposed facility complies with all of the following applicable rule sections. 47.C.F.R Sections 73.6011, 73.6012, 73.6013, 73.6014, 73.6020, 73.1030 and 74.709.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 6]
12.	<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> .  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.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 7]

**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 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 06/07/2007	
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).