

ENGINEERING STATEMENT  
ON BEHALF OF  
MISSION BROADCASTING, INC.  
MODIFICATION OF CONSTRUCTION PERMIT  
(FCC FILE NO. BMPCDT-19991101AJG)  
WFXW-DT, TERRE HAUTE, INDIANA  
CHANNEL 39 850 KW ERP 248 METERS HAAT

JANUARY 2007

COHEN, DIPPELL AND EVERIST, P.C.  
CONSULTING ENGINEERS  
RADIO AND TELEVISION  
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington                    )  
                                                  ) ss  
District of Columbia                )

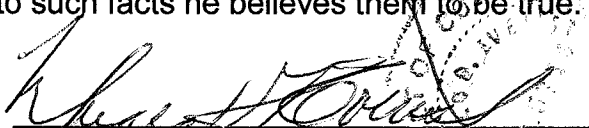
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

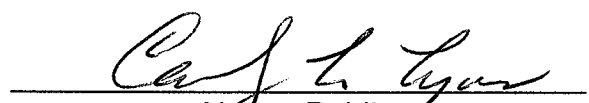
That his qualifications are a matter of record in the Federal Communications Commission;

That the attached engineering report was prepared by him or under his supervision and direction and

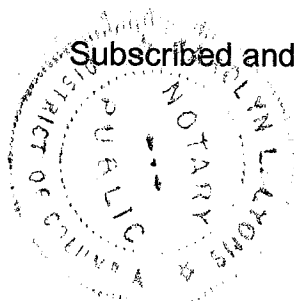
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

  
\_\_\_\_\_  
Donald G. Everist  
District of Columbia  
Professional Engineer  
Registration No. 5714

Subscribed and sworn to before me this 22<sup>nd</sup> day of January, 2007.

  
\_\_\_\_\_  
Notary Public

My Commission Expires: 2/28/2008



COHEN, DIPPELL AND EVERIST, P. C.

City of Washington                     )  
                                                      ) ss  
District of Columbia                 )

Martin R. Doczkat being duly sworn upon his oath, deposes and states that:

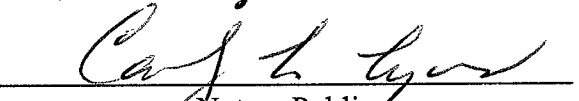
He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That the attached engineering report was prepared by him or under his supervision and direction and

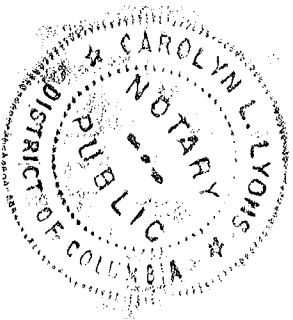
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

  
Martin R. Doczkat

Subscribed and sworn to before me this 22<sup>nd</sup> day of January, 2007.

  
Notary Public

My Commission Expires: 2/28/2008



This engineering statement has been prepared on behalf of Mission Broadcasting, Inc., licensee of WFXW(TV), Channel 38, Terre Haute, Indiana. The purpose of this engineering statement is to modify its DTV construction permit (FCC File No. BMPCDT-19991101AJG), for maximization of digital television (“DTV”) facilities.

WFXW(TV) is licensed to operate on NTSC television Channel 38 with a maximum visual effective radiated power (ERP) of 2140 kW (horizontal polarization) and height above average terrain (HAAT) of 299 meters. WFXW-DT has been allocated DTV Channel 39 with facilities of 56.8 kW directional ERP and HAAT of 299 meters in the revised DTV Table of Allotments.<sup>1</sup> WFXW-DT currently has a construction permit (FCC File No. BMPCDT-19991101AJG) for 1000 kW non-directional ERP at 282 meters HAAT. WFXW-DT proposes to modify its maximized DTV operation by constructing non-directional Channel 39 DTV facilities of 1000 kW (horizontal polarization) at an HAAT of 248 meters at the WTWO(TV) tower site.

The DTV antenna will be side-mounted on the existing WTWO(TV) tower. The tower has an overall structure height above ground of 304.5 meters (999 feet). Exhibit E-1 shows a vertical sketch and the arrangement of the antennas on the tower. The existing transmitter site is located west of U.S. Highway 41, approximately one mile southwest.

The geographic coordinates of the site are:

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<sup>1</sup>“In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service”, MM Docket No. 87-286, Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order (FCC 98-24) February 12, 1998, DTV Table of Allotments (Appendix B).

North Latitude: 39° 14' 33"

West Longitude: 87° 23' 29"

NAD-27

Tower Registration No. 1027196

Equipment Data

Antenna:	MCI	No. 9551516 or equivalent
	Beam Tilt	1.0° electrical
	Power Gain	35.05 (15.45 dB)*

Power Data

Transmitter output	30.0 kW	14.77 dBk
Total Transmission line efficiency/loss MCI, 7-3/16", 75 ohm or equivalent, length: 277.4 meters (910 feet)*	80.9%	0.92 dB
Combiner efficiency/loss	93.3%	0.3 dB
Input Power to the antenna	24.25 kW	13.85 dBk
Antenna power gain, Main Lobe	35.05*	15.45 dB
Effective Radiated Power, Max.	850 kW	29.3 dBk

\*Assumed from typical manufacturer data from MCI.

Elevation Data

Vertical dimension of Channel 39 top mounted antenna	[19.8 meters] [65 feet]
Overall height above ground of existing	304.5 meters

antenna structure (including appurtenances)	999.0 feet
Center of radiation of Channel 39	247 meters
antenna above ground	810.4 feet
Elevation of site above mean sea level	167.6 meters
	549.9 feet
Center of radiation of Channel 36	414.6 meters
antenna above mean sea level	1360.3 feet
Overall height above mean sea level	472.1 meters
of existing tower (including beacon)	1548.9 feet
Antenna height above average terrain	248 meters

#### Coverage

The average elevation data for 3.2 to 16.1 km along the eight cardinal radials has been determined from the NGDC 3-second database. The F(50,90) DTV coverage contours have been computed from reference to the propagation data for Channel 39, as published by the FCC in Figure 10, Section 73.699 of the FCC Rules and Regulations. Utilizing the formula in Section 73.625(b)(2) of the rules for the effective heights, it is found that the depression angle,  $A_h$ , varies from 0.421 to 0.445 degrees. Since the relative vertical field is greater than 90% of the maximum at these depression angles, the maximum power was used in determining the distance to the DTV contour.

Exhibit E-3 shows the proposed WFXW-DT, 48 dBu and 41 dBu F(50,90) coverage contours on a map and includes the legal boundaries of Terre Haute, Indiana.

### Interference Analysis

An analysis of predicted interference caused by the proposed WFXW-DT service has not been performed as the proposed F(50,90) 41 dBu contour is not predicted to extend in any direction beyond that authorized by the F(50,90) 41 dBu contour of the outstanding construction permit (see Exhibit E-4).

### Other Licensed and Broadcast Facilities

There are no licensed AM stations within 3.22 km of the proposed site. There are two applications for new AM stations (FCC File No. BNP-20010724ADK and File No. BND-20010724ADL) within 3.22 km of the proposed site, however no interference is foreseen. There are no FM stations located within 2 km of the proposed site and there are numerous TV broadcast stations. No adverse technical effect is anticipated by the DTV operation to any other FCC licensed facility, however, if any problems occur, the permittee will take the necessary steps to resolve them.

### Radio Frequency Field Level ("RFF")

<u>Station</u>	<u>ERP</u> (kW)	<u>HAAT</u> (m)	<u>Frequency</u> (MHz)	<u>Ch</u>	<u>RCAGL**</u> (m)	<u>F*</u>	<u>S (μW/cm<sup>2</sup>)</u>	<u>RFF</u> (%)
WFXW-DT Proposed	850	248	623	39	245.0	0.1	4.8	1.2

\*F = assumed value

\*\* RCAGL - 2 meters

The addition of the WFXW-DT facilities will contribute less than  $4.8 \mu\text{W}/\text{cm}^2$  or less than 1.2% of the limit for an uncontrolled environment to the total RFF levels from the existing operational facilities.

Section 1.1307

The proposed operation based upon the current OET Bulletin No.65, Edition 97-01 dated August 1997 and Supplement A meets the provisions of the FCC radio frequency field guidelines, and thus, complies with Section 1.1307 of the FCC Rules.

An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the permittee indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.
- (a)(2) The existing tower is not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities will be located on a tower which was built prior to the adoption of WT Docket No. 03-128 and will not affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.



- (a)(7) The installation of the DTV facilities on an existing tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to change the current tower lighting unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines in accordance with OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

ABOVE MEAN SEA LEVEL

ABOVE GROUND

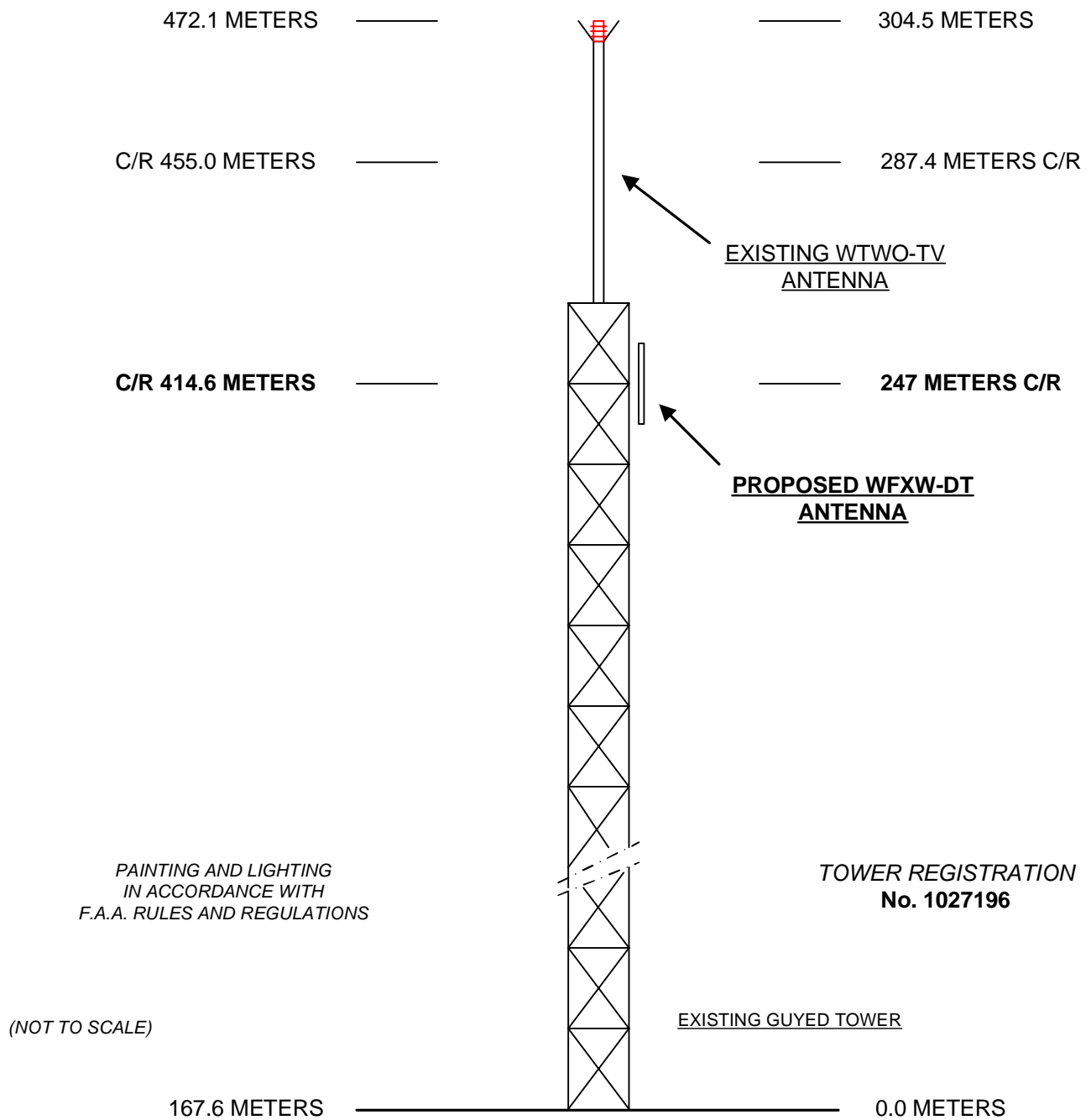


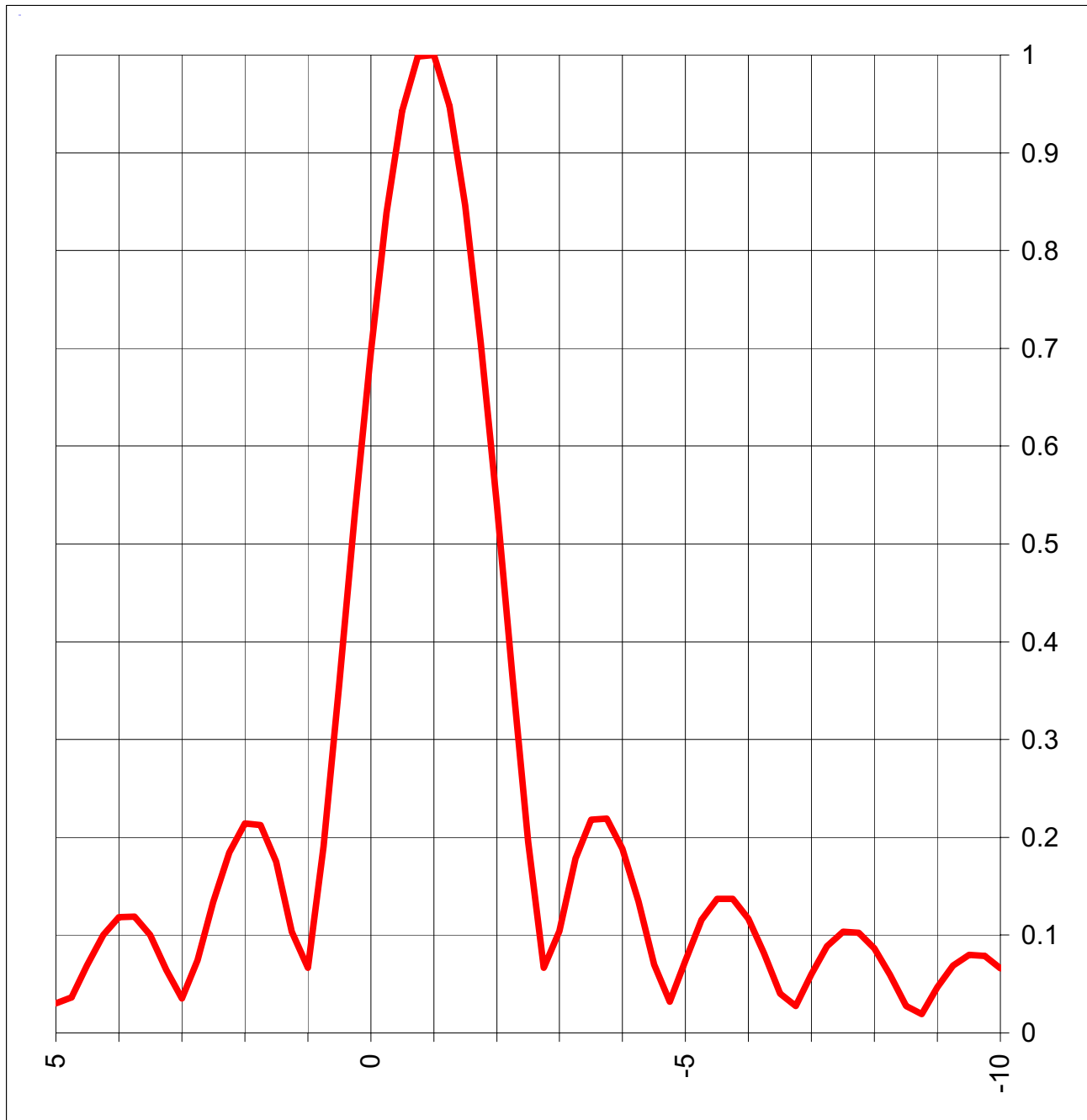
EXHIBIT E-1  
TOWER SKETCH  
FOR THE PROPOSED DTV OPERATION OF  
**WFXW-DT, TERRE HAUTE, INDIANA**  
JANUARY 2007

Cohen, Dippell and Everist, P.C.

EXHIBIT E-2

ANTENNA MANUFACTURER DATA

WFXW-DT, TERRE HAUTE, INDIANA

**Vertical Pattern (Assumed)****Micro Communications, Inc.**

P.O. Box 4365 Manchester, NH 03108-4365

Tel: 800-545-0608

FAX: 603-624-4822

## Vertical Pattern Data (Assumed)

Degrees	Field	Degrees	Field	Degrees	Field	Degrees	Field	Degrees	Field
-10.00	0.049	0.25	0.839	10.50	0.021	20.75	0.004	49	0.004
-9.75	0.058	0.50	0.943	10.75	0.020	21.00	0.013	50	0.011
-9.50	0.058	0.75	0.998	11.00	0.041	21.25	0.023	51	0.014
-9.25	0.049	1.00	1.000	11.25	0.058	21.50	0.030	52	0.005
-9.00	0.033	1.25	0.948	11.50	0.067	21.75	0.033	53	0.009
-8.75	0.015	1.50	0.846	11.75	0.065	22.00	0.030	54	0.014
-8.50	0.023	1.75	0.706	12.00	0.055	22.25	0.024	55	0.008
-8.25	0.043	2.00	0.539	12.25	0.037	22.50	0.015	56	0.005
-8.00	0.059	2.25	0.363	12.50	0.015	22.75	0.007	57	0.013
-7.75	0.066	2.50	0.195	12.75	0.014	23.00	0.011	58	0.012
-7.50	0.063	2.75	0.067	13.00	0.034	23.25	0.019	59	0.003
-7.25	0.049	3.00	0.104	13.25	0.049	23.50	0.026	60	0.008
-7.00	0.028	3.25	0.179	13.50	0.056	23.75	0.029	61	0.013
-6.75	0.016	3.50	0.218	13.75	0.055	24.00	0.028	62	0.011
-6.50	0.038	3.75	0.219	14.00	0.046	24.25	0.024	63	0.003
-6.25	0.063	4.00	0.188	14.25	0.031	24.50	0.016	64	0.008
-6.00	0.079	4.25	0.134	14.50	0.013	24.75	0.008	65	0.013
-5.75	0.084	4.50	0.070	14.75	0.011	25.00	0.009	66	0.013
-5.50	0.076	4.75	0.032	15.00	0.028	26.00	0.029	67	0.008
-5.25	0.055	5.00	0.074	15.25	0.041	27.00	0.009	68	0.003
-5.00	0.030	5.25	0.115	15.50	0.048	28.00	0.033	69	0.009
-4.75	0.037	5.50	0.137	15.75	0.047	29.00	0.009	70	0.012
-4.50	0.070	5.75	0.137	16.00	0.040	30.00	0.040	71	0.012
-4.25	0.100	6.00	0.117	16.25	0.028	31.00	0.024	72	0.008
-4.00	0.118	6.25	0.082	16.50	0.011	32.00	0.056	73	0.004
-3.75	0.119	6.50	0.040	16.75	0.007	33.00	0.120	74	0.003
-3.50	0.100	6.75	0.027	17.00	0.022	34.00	0.117	75	0.006
-3.25	0.064	7.00	0.060	17.25	0.034	35.00	0.060	76	0.008
-3.00	0.035	7.25	0.089	17.50	0.041	36.00	0.006	77	0.010
-2.75	0.075	7.50	0.104	17.75	0.042	37.00	0.025	78	0.011
-2.50	0.134	7.75	0.102	18.00	0.037	38.00	0.011	79	0.010
-2.25	0.185	8.00	0.087	18.25	0.027	39.00	0.014	80	0.009
-2.00	0.214	8.25	0.059	18.50	0.013	40.00	0.017	81	0.007
-1.75	0.213	8.50	0.027	18.75	0.003	41.00	0.004	82	0.005
-1.50	0.175	8.75	0.019	19.00	0.016	42.00	0.017	83	0.005
-1.25	0.104	9.00	0.047	19.25	0.027	43.00	0.011	84	0.006
-1.00	0.067	9.25	0.069	19.50	0.034	44.00	0.008	85	0.008
-0.75	0.191	9.50	0.080	19.75	0.036	45.00	0.016	86	0.010
-0.50	0.356	9.75	0.079	20.00	0.032	46.00	0.006	87	0.011
-0.25	0.530	10.00	0.066	20.25	0.024	47.00	0.011	88	0.012
0.00	0.697	10.25	0.045	20.50	0.013	48.00	0.015	89	0.013
								90	0.013



**Micro Communications, Inc.**

P.O. Box 4365 Manchester, NH 03108-4365

Tel: 800-545-0608

FAX: 603-624-4822

Cohen, Dippell and Everist, P.C.

TABLE I  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WFXW-DT, TERRE HAUTE, INDIANA  
CHANNEL 39 850 KW ERP 248 METERS HAAT  
JANUARY 2007

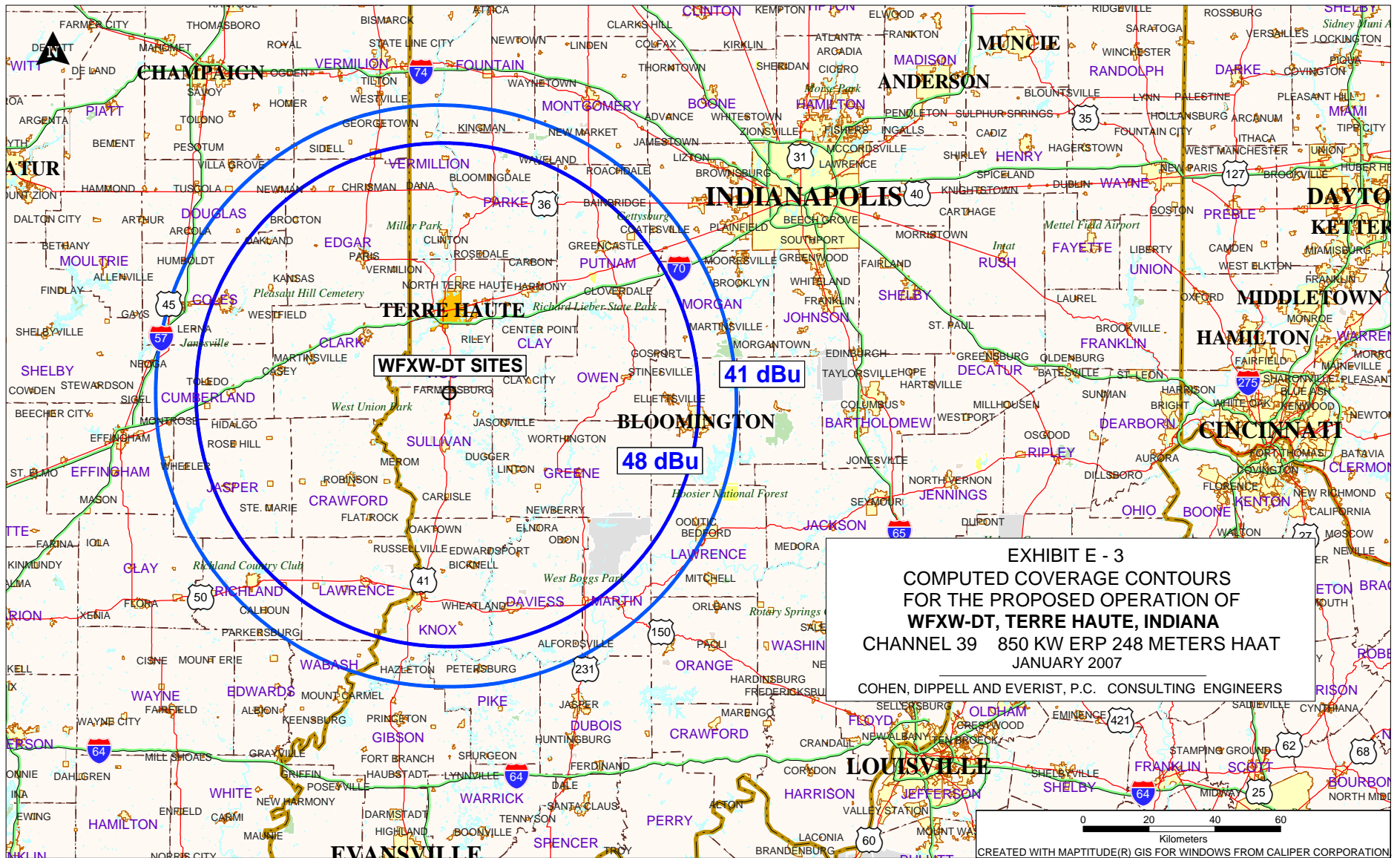
Radial Bearing N ° E, T	Average* Elevation 3.2 to 16.1 km meters	Effective Height meters	Depressio n Angle	ERP At Radio Horizon kW	Distance to Contour F(50,90)	
					48 dBu City Grade km	41 dBu Noise-Limited km
0	174.3	240.3	0.429	850	75.7	87.1
45	183.9	230.7	0.421	850	74.9	85.9
90	175.1	239.5	0.429	850	75.6	87.0
135	161.5	253.1	0.441	850	76.7	88.8
180	161.8	252.8	0.440	850	76.7	88.8
225	156.9	257.7	0.445	850	77.1	89.5
270	159.1	255.5	0.443	850	76.9	89.2
315	160.7	253.9	0.441	850	76.8	88.9
Average	166.6	248.0				

\*Based on data from FCC 3-second data base

DTV Channel 39 (620-626 MHz)  
Average Elevation 3.2 to 16.1 km 166.6 meters AMSL  
Center of Radiation 414.6 meters AMSL  
Antenna Height Above Average Terrain 248 meters  
Effective Radiated Power 850 kW (29.29 dBk) Max.

North Latitude: 39° 14' 33"  
West Longitude: 87° 23' 29"

(NAD-27)









### SECTION III-D - DTV Engineering

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

**Certification Checklist:** A correct answer of "Yes" to all of the questions below will ensure an expeditious grant of a construction permit. 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.

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. ☐ Yes ☐ No
- (b) It will operate 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. ☐ Yes ☐ No
- (c) It will operate 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. ☐ Yes ☐ No
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. ☐ Yes ☐ No

Applicant must **submit the Exhibit** called for in Item 13.

3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community. ☐ Yes ☐ 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. ☐ Yes ☐ No
5. The antenna structure to be used by this facility has been registered by the Commission and will not require reregistration 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. ☐ Yes ☐ 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 \_\_\_\_\_ Analog TV, if any \_\_\_\_\_
2. Zone: ☐ I ☐ II ☐ III
3. Antenna Location Coordinates: (NAD 27)
- \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " ☐ N ☐ S Latitude  
\_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ " ☐ E ☐ W Longitude
4. Antenna Structure Registration Number: \_\_\_\_\_
- ☐ Not applicable ☐ FAA Notification Filed with FAA
5. Antenna Location Site Elevation Above Mean Sea Level: \_\_\_\_\_ meters
6. Overall Tower Height Above Ground Level: \_\_\_\_\_ meters
7. Height of Radiation Center Above Ground Level: \_\_\_\_\_ meters
8. Height of Radiation Center Above Average Terrain: \_\_\_\_\_ meters
9. Maximum Effective Radiated Power (average power): \_\_\_\_\_ kW
10. Antenna Specifications:
- a. 

Manufacturer	Model
--------------	-------
- b. Electrical Beam Tilt: \_\_\_\_\_ 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 No.
- d. Polarization: ☐ Horizontal ☐ Circular ☐ Elliptical

# TECH BOX

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

Rotation: \_\_\_\_\_ ° ☐ No rotation

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

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

Exhibit No.

11. Does the proposed facility satisfy the 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.") ☐ Yes ☐ No

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

Exhibit No.

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

Exhibit No.

13. **Environmental Protection Act. Submit in an Exhibit** the following:

Exhibit No.

- a. 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.

**PREPARER'S CERTIFICATION IN SECTION III MUST BE COMPLETED AND SIGNED.**

WFXW-DT


I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and request an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.)

Typed or Printed Name of Person Signing	Typed or Printed Title of Person Signing
Signature	Date

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).

### 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 Martin R. Doczkat	Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 	Date January 22, 2007	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, NW, Suite 1100		
City Washington	State or Country (if foreign address) DC	ZIP Code 20005
Telephone Number (include area code) (202) 898-0111	E-Mail Address (if available) cde@attglobal.net	

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).