

ENGINEERING STATEMENT RE  
APPLICATION FOR CONSTRUCTION PERMIT  
FOR AUXILIARY OPERATION  
WDRB-DT, LOUISVILLE, KENTUCKY  
CHANNEL 49 1000 KW DIRECTIONAL ERP 367.5 METERS

JULY 2014

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 )

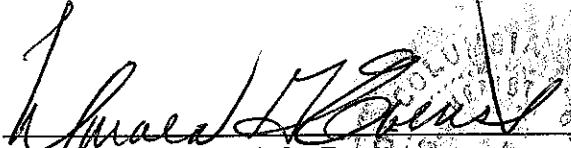
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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 1420 N Street, N.W., Suite One, Washington, D.C. 20005;

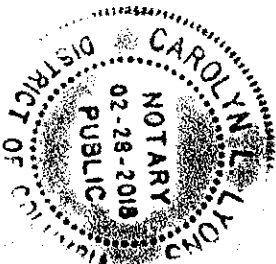
That his qualifications are a matter of record in the Federal Communications Commission;

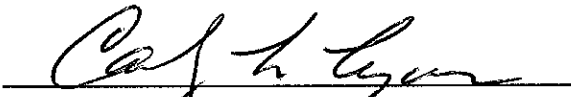
That the attached engineering report was prepared by him or under his supervision and direction and

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 30<sup>th</sup> day of July, 2014.



  
Notary Public

My Commission Expires: 2/28/2018

This engineering statement has been prepared on behalf of Independence Television Company licensee of WDRB-DT, Louisville, Kentucky, and accompanies the request for construction permit for auxiliary operation.

WDRB-DT is licensed to operate on Channel 49 with 1000 kW non-directional ERP at 390.4 meters height above average terrain ("HAAT").

There are no AM stations located within 3.22 km of the existing WDRB-DT tower site and there are no FM stations within 1 km. Other than the colocated full service station WMYO-DT, there are no full-service DTV stations located within 0.1 km of the WDRB-DT transmitting site.

The DTV antenna will be side-mounted on an existing tower having a total overall structure height above ground of 304.8 meters (1000 feet). The existing transmitter site is located at 5257 S Skyline Dr, Floyds Knob, Indiana.

The proposed Dielectric antenna (TFU-32DSB-R-DC-S) has been modeled using that manufacturer's software designed to calculate the specific effects of the WDRB tower on the WDRB-DT pattern. Best efforts have been made to maximize the pattern. For WMYO-DT's radiation pattern that modeling software model also calculated the tower effects on the WMYO-DT signal and was designed to enhance to the extent feasible the WMYO-DT service area.

Since there is no change in overall height, FAA airspace approval is not required. The tower registration number of the existing tower is 1028421. Exhibit E-1 is a diagram of the tower and the location of the proposed transmitting antenna.

The geographic coordinates of the existing site are as follows:

North Latitude: 38° 21' 00"

West Longitude: 85° 50' 57"

NAD-27

#### Equipment Data

Antenna: Dielectric, Type TFU-32DSB-R-DC-S, Special (horizontally polarized) antenna with 0.75° electrical beam tilt. The vertical plane pattern and other exhibits required by Section 73.625(c) are herein included. See Exhibit E-2 which includes Table I (field ratio values every 10 degrees in azimuth)

#### Power Data

Transmitter output EHT 7" or equivalent-length 274.3 meters (900 ft)	27.10 kW 79.5%	14.33 dBk 1.00 dB
Input power to the antenna	21.5 kW	13.33 dBk
Antenna power gain, Main Lobe	46.5	16.67 dB
Effective Radiated Power, Maximum	1000 kW	30 dBk

#### Elevation Data

Vertical dimension of Channel 49 side-mounted antenna	16.2 meters 53.1 feet
Overall height above ground of the existing antenna structure (including beacon and lightning protection)	304.8 meters 1000 feet
Center of radiation of Channel 49	273.1 meters

antenna above ground	896 feet
Elevation of site above mean sea level	292.9 meters 961 feet
Center of radiation of Channel 49 antenna above mean sea level	566 meters 1857 feet
Overall height above mean sea level of existing tower (including beacon)	597.7 meters 1961 feet
Antenna height above average terrain	367.5 meters 1206 feet

NOTE: Slight height differences result due to conversion to metric.

#### Coverage

The average elevation data for 3 to 16 km along each radial has been determined from the NGDC 3-second computerized terrain database and conform very closely to the terrain information of that determined by using the 7.5 minute topographic maps on file at the Commission. However, HAAT is based on the 7-1/2 minute topographic terrain data abstracted from the WDRB-TV licensed file number BLCT-2067. The F(50,90) DTV coverage contours have been computed from reference to the propagation data for Channels 14-69, as published by the FCC in Figure 10b and Figure 10c, 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 0.485 to 0.580 degrees.

Table II includes the distances to the F(50,90) 48 and 41 dBu coverage contours, the average elevation 3 to 16 km, and the antenna height above average terrain for the each radial spaced 10 degrees in azimuth beginning at N 0°ET. Exhibit E-3 provides a map of the coverage.

### Allocation

An allocation spacing study from the proposed site has not been performed as the predicted 41 dBu F(50,90) contour of the proposed DTV facilities is totally contained within the licensed operation. Exhibit E-4 provides a map demonstrating compliance with Section 73.1675 of the FCC Rules.

### Other Licensed and Broadcast Facilities

No adverse technical effect is anticipated by the proposed DTV operation to any other FCC licensed facility. If required, the licensee will install filters or take other measures as necessary to resolve the problem.

### FCC Rule, Section 1.1307

The RF contribution is calculated using the following formula:

$$S = \frac{33.4(F^2) \text{ Total ERP}}{R^2}$$

where:

$$\begin{aligned} S &= \text{power density in } \mu\text{W}/\text{cm}^2 \\ F &= \text{relative field factor} \\ \text{Total ERP} &= \text{ERP Horizontal Polarization} + \text{ERP Vertical Polarization in watts} \\ R &= \text{RCAGL - 2 meters} \end{aligned}$$

The proposed operation based upon the current OET Bulletin No. 65, Edition No. 97-01, dated August 1997 and Supplement A meets the provisions of the FCC radio frequency field (“RFF”) guidelines, and thus, complies with Section 1.1307 of the FCC Rules. Provisions will be made to reduce power or to terminate the transmitter emissions, as appropriate, when it is necessary for authorized personnel to be on the tower.

The radio frequency field analysis of the existing site is calculated in the following table:

<u>Station</u>	<u>ERP</u> (kW)	<u>Frequency</u> (MHz)	<u>Ch</u>	<u>RCAGL</u> (m)	<u>Relative</u> <u>Field</u>	<u>S</u> ( $\mu\text{W}/\text{cm}^2$ )	<u>RFF</u> (%)
WDRB-DT Proposed	1000	683	49	271.1	0.15	10.2	2.3
WMYO-DT	1000	695	51	271.1	0.15	10.2	2.2

For DTV operation, WDRB-DT proposes to use a Dielectric, Type TFU-32DSB-R-DC-S antenna. The elevation pattern for this antenna shows a maximum relative field of less than 0.15 towards the ground in the vicinity of the tower. Using this relative field factor and the procedures prescribed in OET Bulletin 65, the maximum RFF resulting from the proposed WDRB-DT operation is less than  $10.2 \mu\text{W}/\text{cm}^2$ . This is less than 2.3% of the  $455.3 \mu\text{W}/\text{cm}^2$  maximum human exposure to RFF recommended by the current FCC guidelines for the general population.

Simultaneously an application for WMYO-DT will be filed. WMYO-DT will diplex into the antenna described above for WDRB-DT. The elevation pattern for this antenna shows a maximum

relative field factor of less than 0.15 towards the ground in the vicinity of the tower. Using this relative field factor and the procedure prescribed presented in OET Bulletin 65, the maximum RFF resulting from the proposed WMYO-DT operation is less than  $10.2 \mu\text{W}/\text{cm}^2$ . This is less than 2.2% of the  $463.3 \mu\text{W}/\text{cm}^2$  maximum human exposure to RFF recommended by the current FCC guidelines for the general population.

The total contribution by the proposed WDRB-DT DTV broadcast facilities and the addition of the proposed operation of WMYO-DT at 2 meters above ground level is less than 4.5% of the current FCC guidelines for general population exposure.

Authorized personnel and rigging contractors will be alerted to the potential zone of high field values on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations since the licensee indicates:

- (a)(1) The proposed facilities on an existing communications site are not located in an officially designated wilderness area.
- (a)(2) The proposed facilities on an existing communications site are 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 not affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The proposed facilities are not located near any known Indian religious sites.
- (a)(6) The proposed facilities are not located in a flood plain.
- (a)(7) The operation of the proposed auxiliary DTV facilities on the 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 equip the tower with high intensity white lights 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. A security fence with a locked gate prevents unauthorized access to the tower site.

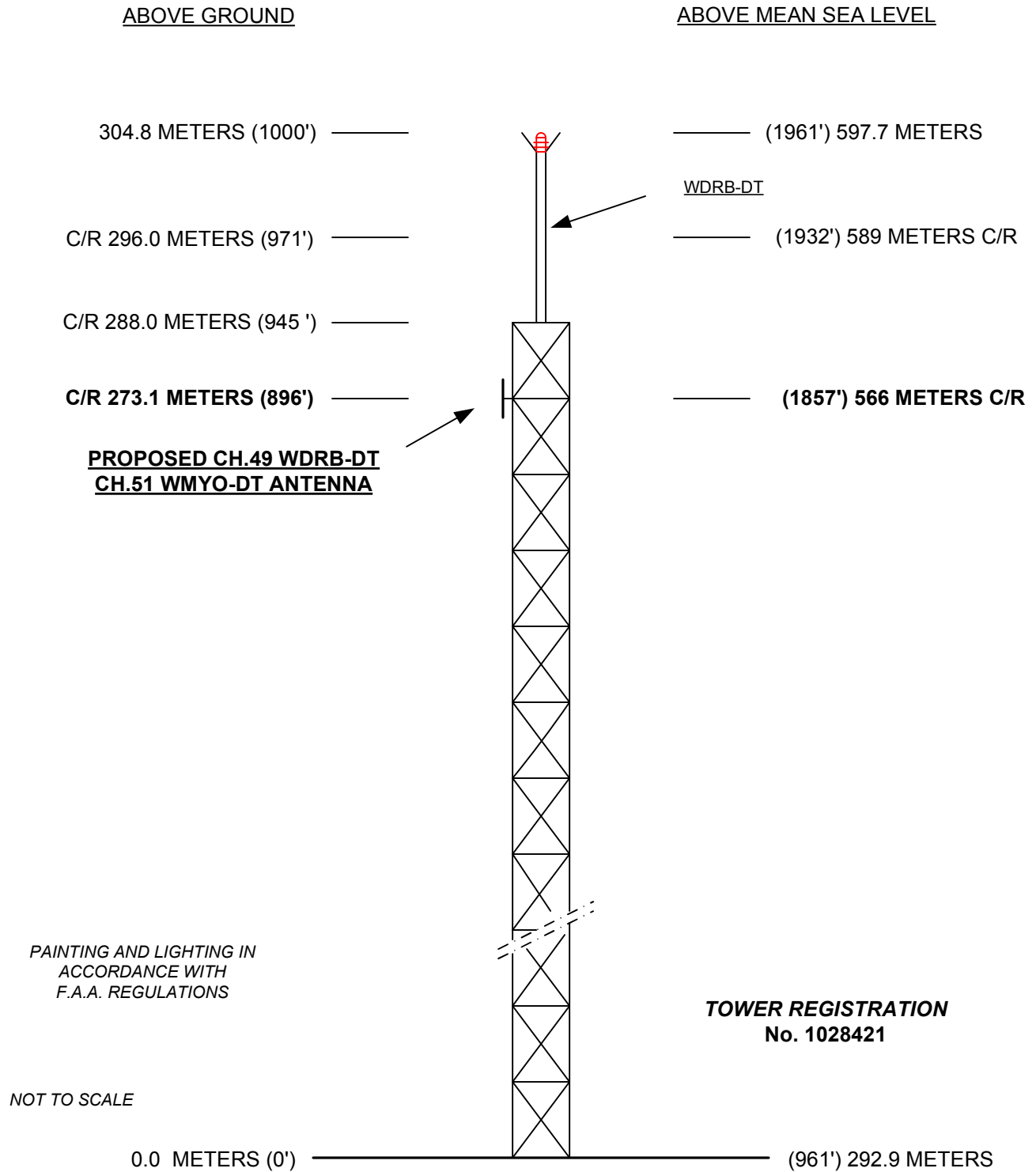


EXHIBIT E-1  
TOWER SKETCH  
EXISTING TOWER  
WDRB-DT, LOUISVILLE, KENTUCKY  
JULY 2014

EXHIBIT E-2

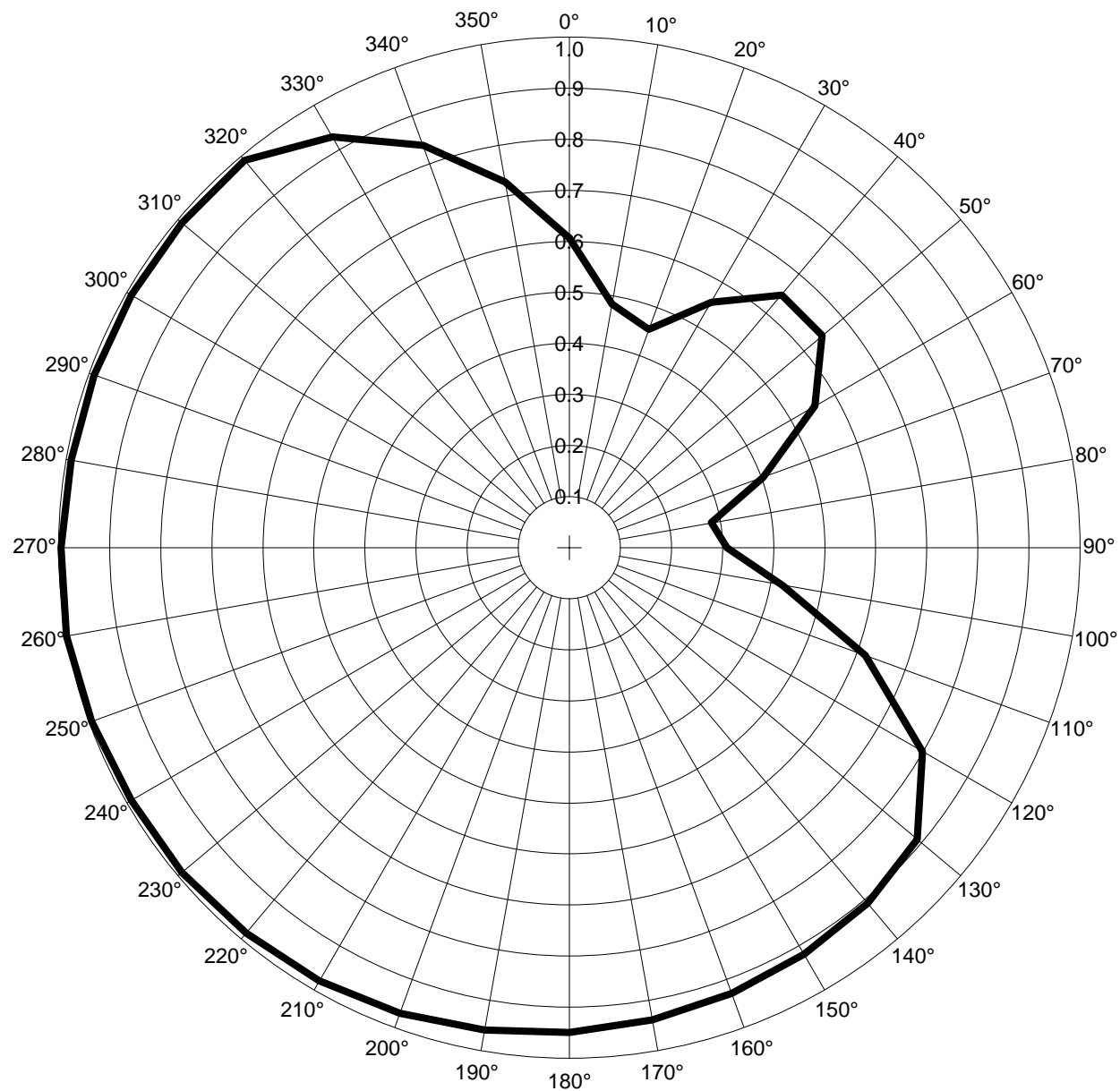
ANTENNA MANUFACTURER DATA

WDRB-DT, LOUISVILLE, KENTUCKY

TABLE I  
TABULATION OF HORIZONTAL FIELD VALUE  
FOR THE PROPOSED OPERATION OF  
WDRB-DT, LOUISVILLE, KENTUCKY  
CH49 1000 KW DA ERP 367.5 METERS HAAT  
JULY 2014

<u>Azimuth</u> N °E, T	<u>Field</u>	<u>Azimuth</u> N °E, T	<u>Field</u>
0	0.6	180	0.94
10	0.48	190	0.95
20	0.45	200	0.96
30	0.55	210	0.97
40	0.64	220	0.975
50	0.64	230	0.98
60	0.55	240	0.98
70	0.4	250	0.985
80	0.28	260	1.00
90	0.305	270	0.985
100	0.42	280	0.98
110	0.61	290	0.98
120	0.79	300	0.98
130	0.88	310	0.98
140	0.9	320	0.98
150	0.91	330	0.92
160	0.92	340	0.83
170	0.93	350	0.72

# HORIZONTAL PLANE PATTERN



Relative Intensity

Pattern file: WDRB 05162005.pat

EXHIBIT E-2a

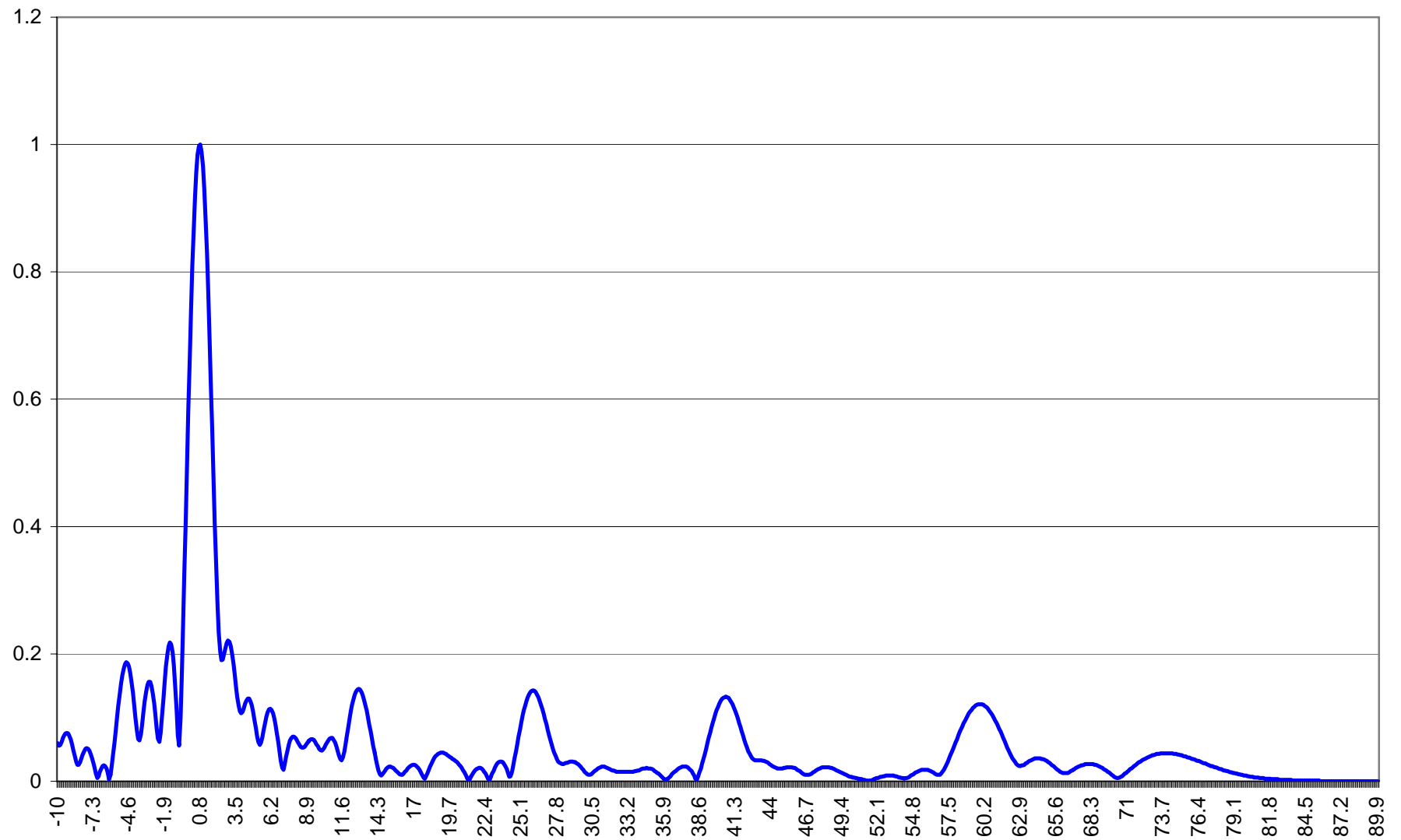


TABLE II  
DTV COVERAGE DATA  
FOR PROPOSED OPERATION OF  
WDRB-DT, LOUISVILLE, KENTUCKY  
CHANNEL 49 1000 KW ERP 367.5 METERS HAAT  
JULY 2014

<u>Radial</u> N ° E, T	<u>Average*</u>	<u>Effective</u>	<u>Depression</u>	<u>ERP</u> kW	<u>Distance to Contour</u>	
	<u>Elevation</u> meters	<u>Height</u> meters	<u>Angle</u> degrees		<u>48 dBu</u> km	<u>41 dBu</u> km
0	231.8	334.2	0.506	360.0	79.6	91.7
10	230.7	335.3	0.507	230.4	76.8	88.2
20	194.4	371.6	0.534	202.5	79.2	90.5
30	172.8	393.2	0.549	302.5	83.4	94.9
40	158.7	407.3	0.559	409.6	86.2	98.3
50	154.3	411.7	0.562	409.6	86.5	98.6
60	150.5	415.5	0.565	302.5	84.7	96.3
70	149.3	416.7	0.565	160.0	80.6	91.4
80	145.4	420.6	0.568	78.4	76.2	86.6
90	142.2	423.8	0.570	93.0	77.5	88.0
100	139.6	426.4	0.572	176.4	81.7	92.7
110	135.9	430.1	0.574	372.1	86.7	99.2
120	135.9	430.1	0.574	624.1	90.3	104.1
130	132.3	433.7	0.577	774.4	92.1	106.5
140	127.9	438.1	0.580	810.0	92.7	107.4
150	129.2	436.8	0.579	828.1	92.8	107.5
160	129.3	436.7	0.579	846.4	93.0	107.7
170	129.9	436.1	0.578	864.9	93.1	107.9
180	140.6	425.4	0.571	883.6	92.6	107.2
190	157.5	408.5	0.560	902.5	91.8	105.9
200	187.0	379.0	0.539	921.6	90.2	103.5
210	212.5	353.5	0.521	940.9	88.4	101.6
220	252.3	313.7	0.491	950.6	84.2	97.9
230	257.3	308.7	0.487	960.4	83.8	97.4
240	248.8	317.2	0.493	960.4	84.7	98.4
250	248.7	317.3	0.493	970.2	84.8	98.5
260	241.1	324.9	0.499	1000.0	85.8	99.5
270	226.3	339.7	0.511	970.2	87.3	100.7
280	240.5	325.5	0.500	960.4	85.7	99.2

TABLE II  
DTV COVERAGE DATA  
FOR PROPOSED OPERATION OF  
WDRB-DT, LOUISVILLE, KENTUCKY  
CHANNEL 49 1000 kW ERP 367.5 METERS HAAT  
JULY 2014  
(continued)

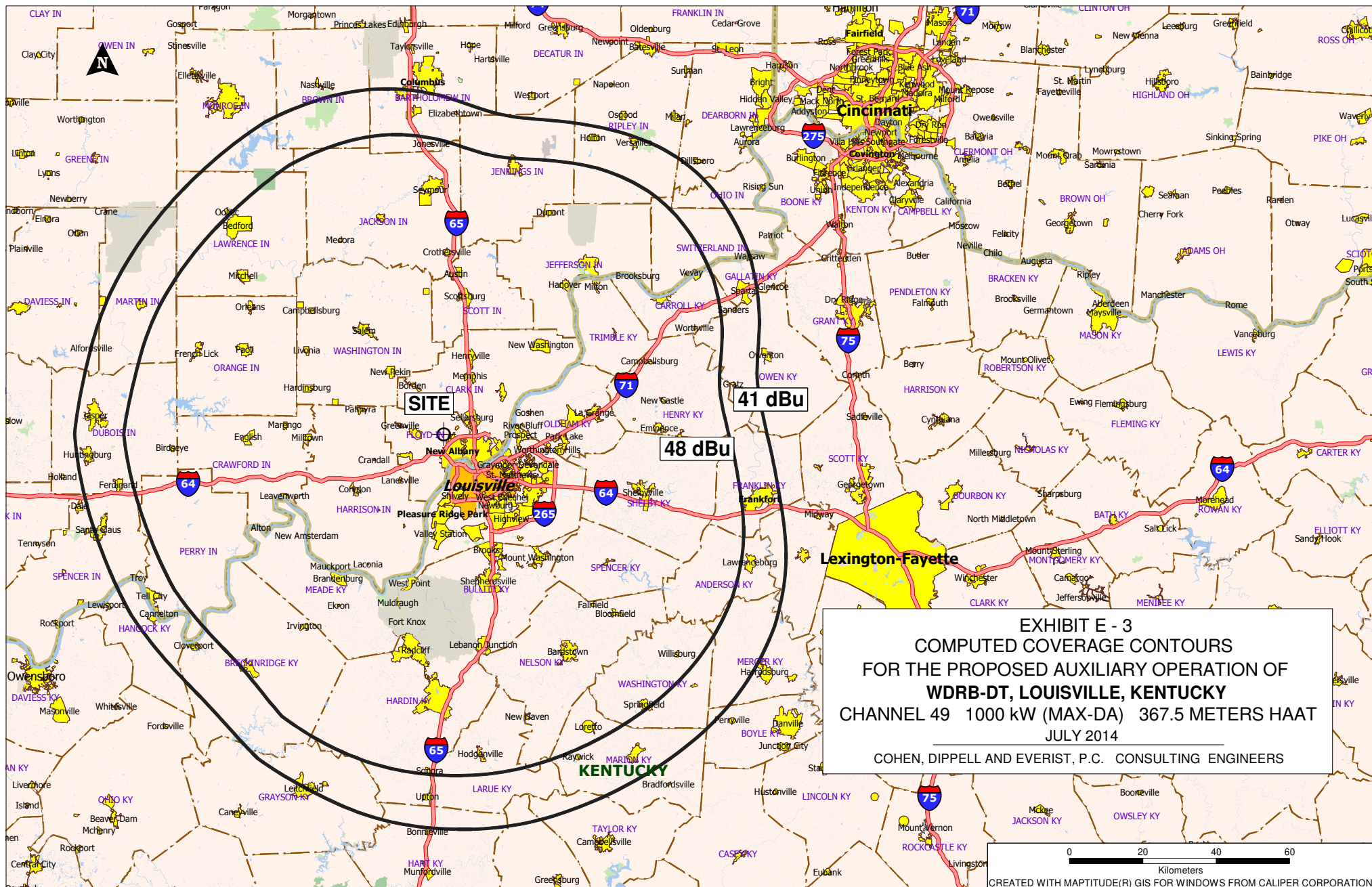
<u>Radial</u> N ° E, T	<u>Average*</u> <u>Elevation</u>	<u>Effective</u> <u>Height</u>	<u>Depression</u> <u>Angle</u>	<u>ERP</u> kW	<u>Distance to Contour</u>	
	meters	meters	degrees		<u>48 dBu</u> km	<u>41 dBu</u> km
290	244.6	321.4	0.497	960.4	85.2	98.8
300	251.4	314.6	0.491	960.4	84.4	98.1
310	257.4	308.6	0.487	960.4	83.7	97.4
320	259.1	306.9	0.485	960.4	83.5	97.2
330	244.0	322.0	0.497	846.4	84.3	97.7
340	234.6	331.4	0.504	688.9	83.8	96.9
350	227.2	338.8	0.510	518.4	82.6	95.2

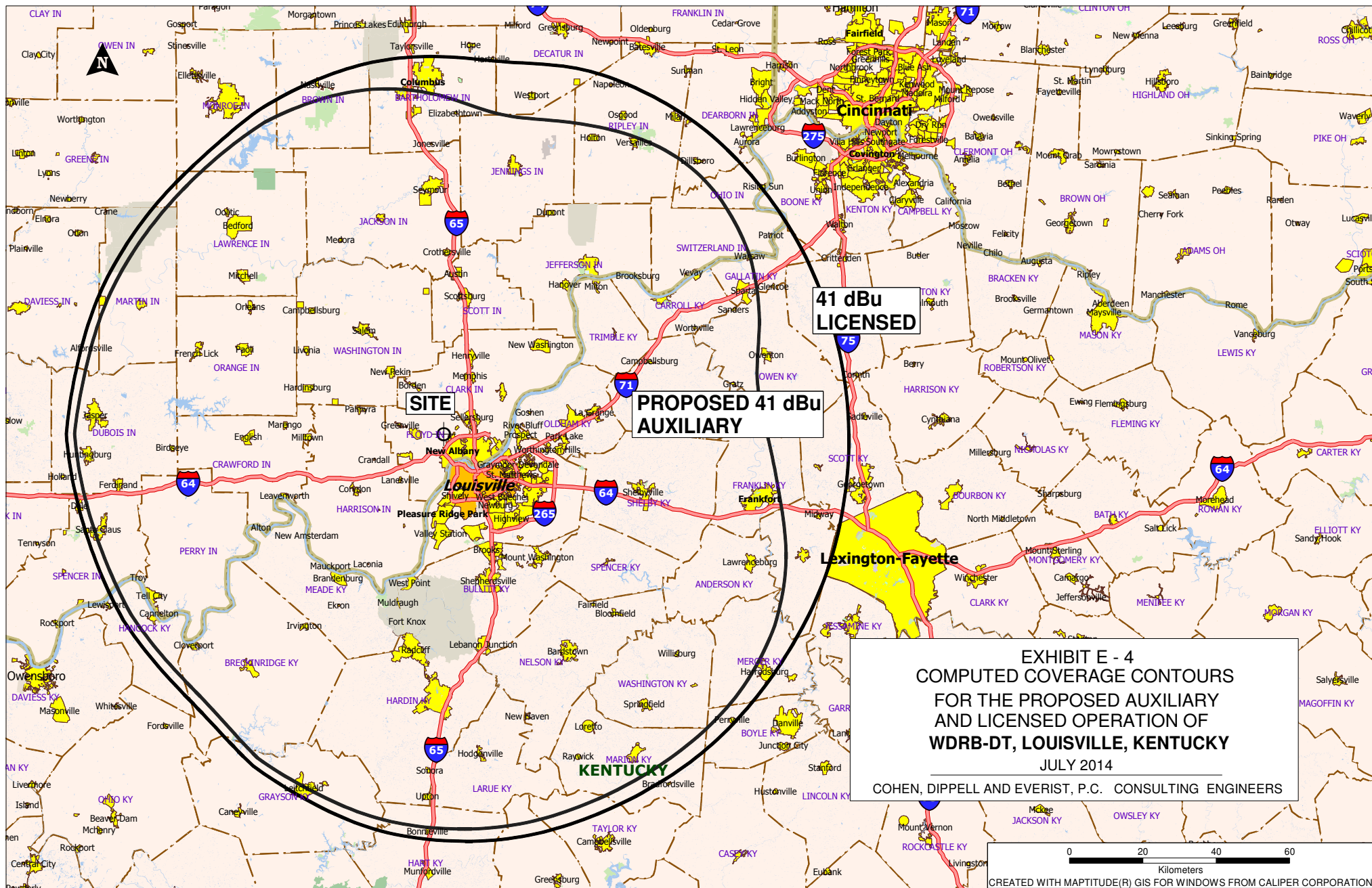
\*Based on data from FCC 3-second data base--see text, Page 3 for HAAT determination.

DTV Channel 49 (680-686 MHz)  
Average Elevation 3.2 to 16.1 km 192.3 meters AMSL  
Center of Radiation 566 meters AMSL  
Antenna Height Above Average Terrain 367.5 meters  
Effective Radiated Power 1000 kW (30 dBk) Max

North Latitude: 38° 21' 00"  
West Longitude: 85° 50' 57"

(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.

- ☐ Yes ☐ 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. ☐ 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.**

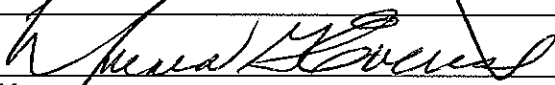
I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular 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 Donald G. Everist		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date <i>July 30, 2014</i>	
Mailing Address Cohen, Dippell and Everist, P.C., 1420 N Street, NW, Suite One			
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).