

ENGINEERING STATEMENT RE
APPLICATION FOR AUXILIARY OPERATION
MODIFICATION OF AUTHORIZED AUXILIARY OPERATION
FCC FILE NO. 0000004441
WDRB(TV), LOUISVILLE, KENTUCKY
CHANNEL 32 724 KW MAX ERP 361 METERS HAAT

AUGUST 2019

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)

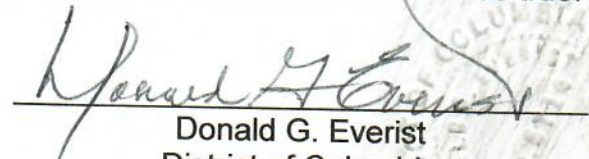
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

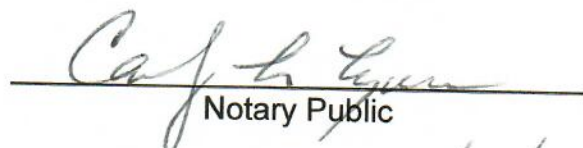
That his qualifications are a matter of record in the Federal Communications Commission;

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 16th day of August, 2019.


Notary Public

My Commission Expires: 2/28/2023



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

WDRB(TV) is authorized (FCC Construction Permit File No. 0000034591) to operate on Channel 32 with 1000 kW non-directional Effective Radiated Power (ERP) at 390.4 meters with height above average terrain ("HAAT"). WDRB(TV) has a license for auxiliary operation on Channel 49 (0000004441). This engineering statement seeks to change channel (32 from 41), height above average terrain, ERP and site.

The DTV antenna will be side-mounted on a new 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.

FAA airspace approval has been received. The tower registration number of the tower is 1307446. The FAA authorization is 2018-AGL-12014-OE. Exhibit E-1 is a diagram of the tower and provides the location of the auxiliary antenna.

The tower geographic coordinates of the tower site are as follows:

North Latitude: 38° 21' 0.76"

West Longitude: 85° 50' 57.1"

NAD-27

The tower geographic coordinates in datum NAD-83 based on the antenna registration number 1307446 are as follows:

North Latitude: 38° 21' 01.0"

West Longitude: 85° 50' 57.0"

NAD-83

Equipment Data

Antenna: ERI, Type ATW16H3-HSCX-32H (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.

Transmission Line: 1075 feet (327.7 meters) 6-1/8 inch, 75 ohm rigid line (loss--0.110 dB/100 ft.)

Power Data

Transmitter output	39.82 kW	16.00 dBk
Transmission Line Efficiency/Loss equivalent-length 327.7 meters (1075 ft)	76.16%	1.183 dB
Input power to the antenna	30.33 kW	14.82 dBk
Antenna power gain, Main Lobe	23.87	13.78 dB
Effective Radiated Power, (Horizontal) Maximum	724 kW	28.6 dBk

Elevation Data

Vertical dimension of Channel 32 side-mounted antenna	9.7 meters 31.9 feet
Overall height above ground of the antenna structure (including beacon and lightning protection)	304.8 meters 1000 feet

Center of radiation of Channel 32 antenna above ground	263.96 meters 866 feet
Elevation of site above mean sea level	294.1 meters 964.9 feet
Center of radiation of Channel 32 antenna above mean sea level	558.06 meters 1830.9 feet
Overall height above mean sea level of tower (including beacon and lightning protection)	598.9 meters 1964.9 feet
Antenna height above average terrain	361 meters 1184.4 feet

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

Contour Data

Utilizing the formula in Section 73.625(b)(2) for the effective heights along each radial, the depression angle (range is 0.481° - 0.567°) for each azimuth has been calculated. The maximum radiation value has been used to calculate the ERP where the vertical radiation pattern field value at these angles is greater than 90% of the maximum.

Coverage

Table 1 provides the distance calculated by TVStudy 2.2 along each radial spaced every ten degrees in azimuth to the predicted F(50,90) 41 dBu contour, the effective radiated power and the effective antenna heights. The predicted 41 dBu contour determined from distances are shown on the attached map (Exhibit E-3). Exhibit E-4 demonstrates that the proposed auxiliary's operation

of the predicted 41 dBu contour is totally contained within the authorized construction permit's predicted (FCC 0000034591) 41 dBu contour.

Other Broadcast Facilities

An analysis was completed to determine the presence of stations in the vicinity of the proposed tower site. Within 0.5 kilometer of the proposed site, there are no analog nor DTV translator stations and with the exception of WBKI(TV) and WDRB(TV) there are no other TV or FM full service stations. There are no AM stations within 3.22 km of the proposed tower. Although no adverse technical effects are expected due to the proposed change, the licensee will take measures to resolve any problems proven to be related to the changes proposed in this application.

Radio Frequency Field Level

The DTV antenna will be mounted on the proposed tower at the 263.96 meters radiation center above ground level. WBKI(TV) and WDRB(TV) are the only broadcast stations which currently are proposed to operate at or near the proposed site.

Pursuant to OET Bulletin No. 65, dated August 1997, the RFF study will consider the following proposed WDRB(TV) station.

The RFF radiation contribution of the proposed station will be calculated using the following formula:

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

where:

S = power density in $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

WDRB(TV) Proposed Facility

Channel 32 Freq: 578-584 MHz Range
 ERP = 724,000 Watts
 Polarization: horizontal
 RC/AGL - 2 meters = 261.96 meters

WDRB(TV) proposes to utilize an ERI Model ATW16H3-HSCX-32H antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane radiation pattern's field factor will be less than 0.094 at any angle greater than 20 degrees below the horizon. A value of 0.094 will be used in the calculation.

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

Tot ERP =	724,000 watts (Horizontal)
R =	261.96 meters
F =	0.094 (field factor)

$$S = <4 \mu\text{W}/\text{cm}^2$$

WDRB(TV) contributes less than 4 $\mu\text{W}/\text{cm}^2$ at 2 meters above the ground.

The limit for an uncontrolled environment is 387.3 $\mu\text{W}/\text{cm}^2$ for a station broadcasting in the 578-584 MHz frequency range.

Therefore:

WDRB(TV)'s proposed DTV facility will contribute less than 2% RFF for an uncontrolled environment two meters above the ground at the proposed tower site.

WBKI(TV) Proposed Facility

Channel 16 Freq: 482-488 MHz Range
 ERP = 725,000 Watts
 Polarization: horizontal
 RC/AGL - 2 meters = 240.9 meters

WBKI(TV) proposes to utilize an ERI Model ATW19H3-HSCX-16H antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane radiation pattern is included in Exhibit E-2. Based on this plot, the field factor will be less than 0.076 at any angle greater than 20 degrees below the horizon. A value of 0.076 will be used in the calculation.

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

Tot ERP =	725,000 watts (Horizontal)
R =	240.9 meters
F =	0.076 (field factor)

$$S = <3 \mu\text{W}/\text{cm}^2$$

WBKI(TV) contributes less than three $\mu\text{W}/\text{cm}^2$ at 2 meters above the ground. The limit for an uncontrolled environment is 323.3 $\mu\text{W}/\text{cm}^2$ for a station broadcasting in the 482-488 MHz frequency range.

Therefore:

WBKI(TV)'s proposed DTV facility will contribute less than two percent (2%) RFF for an uncontrolled environment two meters above the ground at the proposed tower site.

ABOVE GROUND

ABOVE MEAN SEA LEVEL

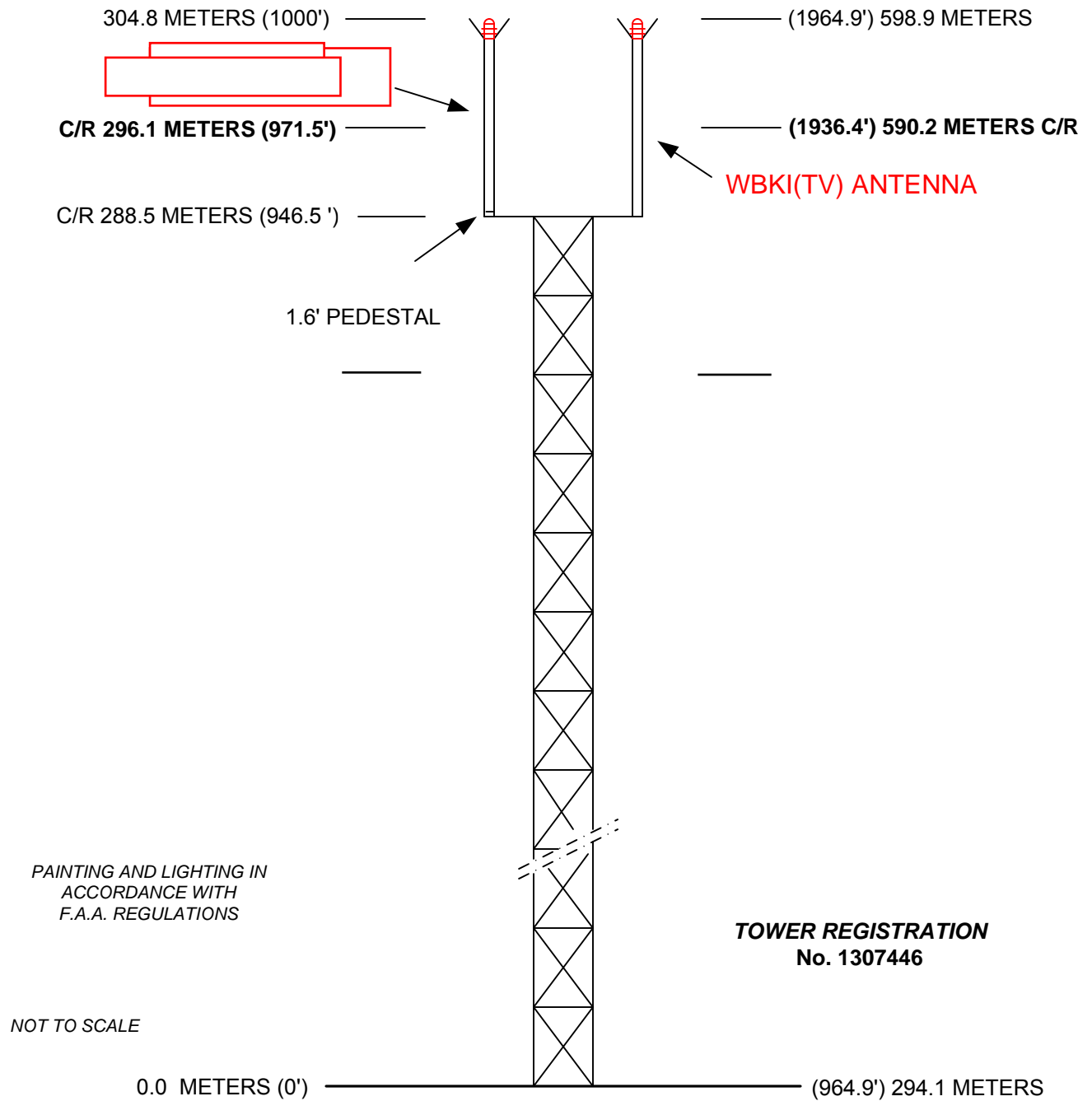


EXHIBIT E - 1
TOWER SKETCH
WDRB-DT, LOUISVILLE, KENTUCKY
OCTOBER 2018

EXHIBIT E-2

WDRB

ANTENNA MANUFACTURER DATA

Preliminary Specification for TRASAR® Side Mounted UHF Horizontally Polarized Coaxial Slotted Array Television Antenna

**WDRB (DT), RF Channel 32
Block Communications, Louisville, KY**

April 24, 2018

**Antenna Model:
ATW16H3-HSCX-32H**

**Specification Number
20170929-827-27r2**

Electronics Research, Inc. 7777 Gardner Road Chandler IN 47610-9219 USA
+1 812 925-6000 (tel) +1 812 925-4030 (fax)

Your Single Source for Broadcast Solutions™ Call Toll-free at 877 ERI-LINE Visit Online at www.eriinc.com

**Preliminary Specification for
TRASAR® Side Mounted
UHF Horizontally Polarized
Coaxial Slotted Array Television Antenna**

Electrical Characteristics:

Channel:		32	
Frequency:		578 MHz to 584 MHz	
Service:		ATSC	
Azimuth Pattern Number:	Horizontal Polarization	ATW-CX-H	
Elevation Pattern Number:	Horizontal Polarization	ATW16H3H	
Azimuth Directivity:	Horizontal Polarization	1.49	(1.74 dB)
Elevation Directivity:	Horizontal Polarization	16.00	(12.04 dBd)
Peak Power Gain:	Horizontal Polarization	23.87	(13.78 dBd)
Gain at Horizontal:	Horizontal Polarization	20.21	(13.05 dBd)
Electrical Beam Tilt:		0.75 Degrees	
Input Power Required:		30.33 kW	(14.82 dBk)
RF Input:		6-1/8-inch EIA, 75 ohm, flanged male	
Input Power Rating (maximum):		50 kW Average Power, 8VSB	
Antenna VSWR (maximum):		1.10 Over 6 MHz Channel	

**Preliminary Specification for
TRASAR® Side Mounted
UHF Horizontally Polarized
Coaxial Slotted Array Television Antenna**

Mechanical Characteristics:

Mounting Configuration: (*Tower interface supplied by others)	Side Mount*		
Height of Antenna:	31.9 feet	(9.7 meters)	
Height of Center of Radiation (above RF input) (B):	15.9 feet	(4.9 meters)	
Overall Height (Includes two 3.5 ft lightning spurs) (A):	35.4 feet	(10.8 meters)	
Deicing:	Fully enclosed pressurized radome		
Radome Diameter (C):	16.4 inches	(417 millimeters)	
Radome Color:	Aviation Orange		
Climbing Device:	Not Applicable		
Calculated Weight ¹ :	No Ice	1200.0 lbm	(544.3 kg)
	0.5inch (13 mm) ice	1765.0 lbm	(800.6 kg)
Windload Data ² :	EPA No Ice	43.1 sq.ft.	(4.0 sq.m.)
	0.5inch (13 mm) ice	84.9 sq.ft.	(7.9 sq.m.)

This antenna is designed to be supported by a structure that can resist the antenna base reactions and which provides a support that is rigid in the three translational and three rotational degrees of freedom.

1 Please note, the listed weights and effective wind areas are based on the PRELIMINARY design of the antenna. Final As-Built values for the antenna are typically within +/-10% of the Preliminary design values, and will be provided in the technical manual that accompanies the antenna. Specified loads include the antenna, beacon and lightning spurs only. Custom mounting brackets/adapters and/or antenna input section are NOT included.

2 Based on a wind speed of 90 miles per hour MPH (145 kph) (fastest mile) no ice and 30 MPH (48 kph) with 0.75-inches in base design ice (2.1-inches actual tiz) with a height above ground level (HAGL) of 971 feet (296 m) per ANSI/TIA-222-G. Structure Class II, Exposure Category C and Topographic Category I. EPA values include two lightning spurs.

NOTE: The purchaser or their representative shall be required to contact the tower owner, state and/or local building officials for specific design requirements and suitable parameters for a particular structure. Any variation from the parameters shown above must be communicated to ERI for comprehensive assessment.

Broadcast Antenna System Power Analysis

WDRB (DT)
Block Communications
Louisville, KY
ATW16H3-HSCX-32H

RF Channel: 32

Antenna Parameters

Azimuth Directivity:

Horizontal: 1.49

(1.74 dB)

Effective Radiated Power:

Horizontal: 724.00 kW

(28.60 dBk)

Elevation Directivity:

Horizontal: 16.00

(12.04 dB)

Power Gain:

Horizontal: 23.87 numeric

(13.78 dBd)

Transmission Line

Vertical Run:

Type: 6-1/8-inch, 75 ohm, rigid line

Length: 875 feet 266.7 meters

Attenuation: 0.110 dB/100 feet 0.361 dB/100 mtrs

Antenna Input Power:

30.33 kW

(14.82 dBk)

Horizontal Run:

Type: 6-1/8-inch, 75 ohm, rigid line

Length: 200 feet 61.0 meters

Attenuation: 0.110 dB/100 feet 0.361 dB/100 mtrs

Transmission Line Losses:

-9.49 kW

(1.183 dB)

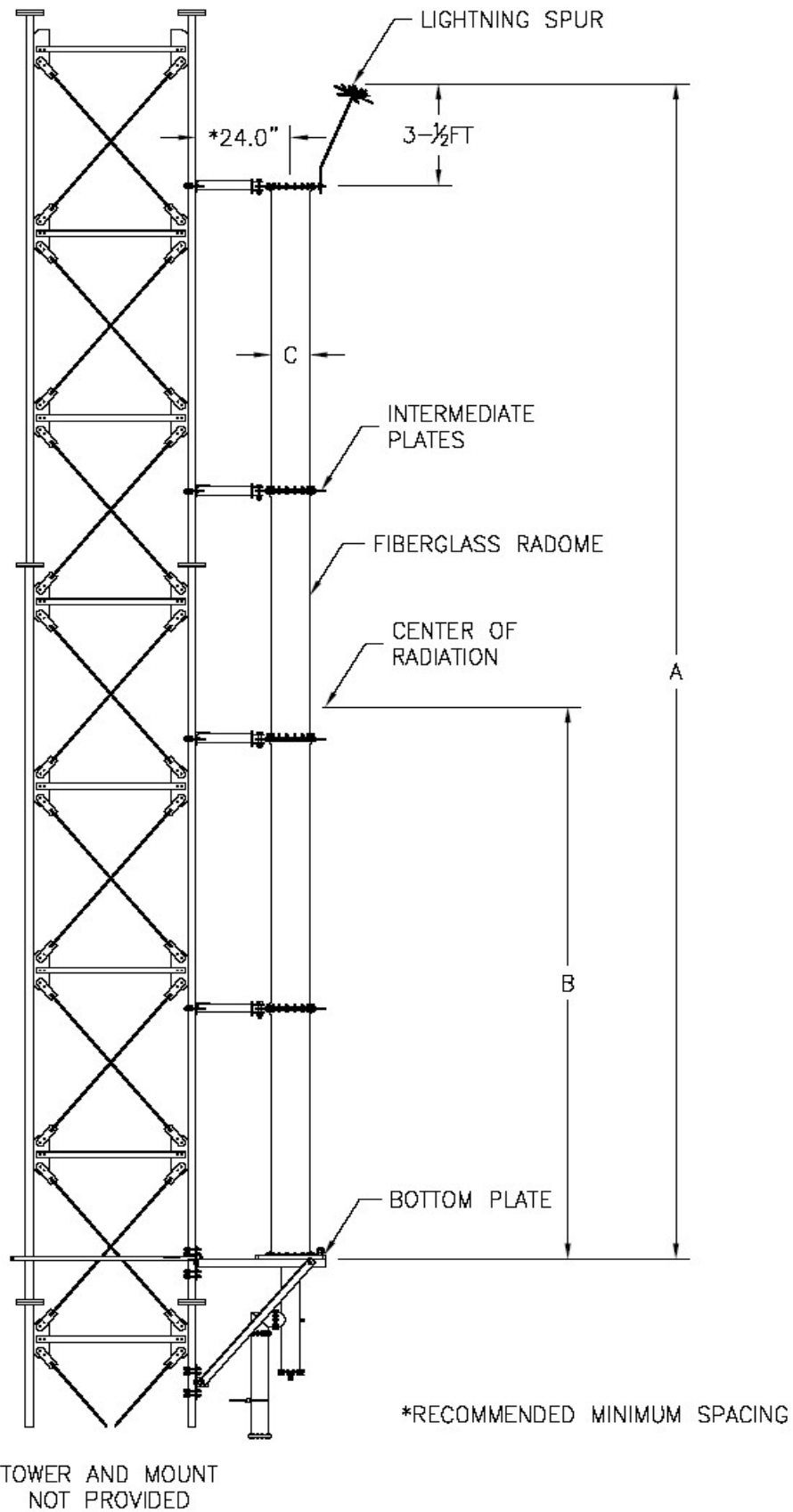
Total Losses: 1.183 dB

Line Efficiency: 76.16%

Transmitter Power Output:

39.82 kW
(16.00 dBk)

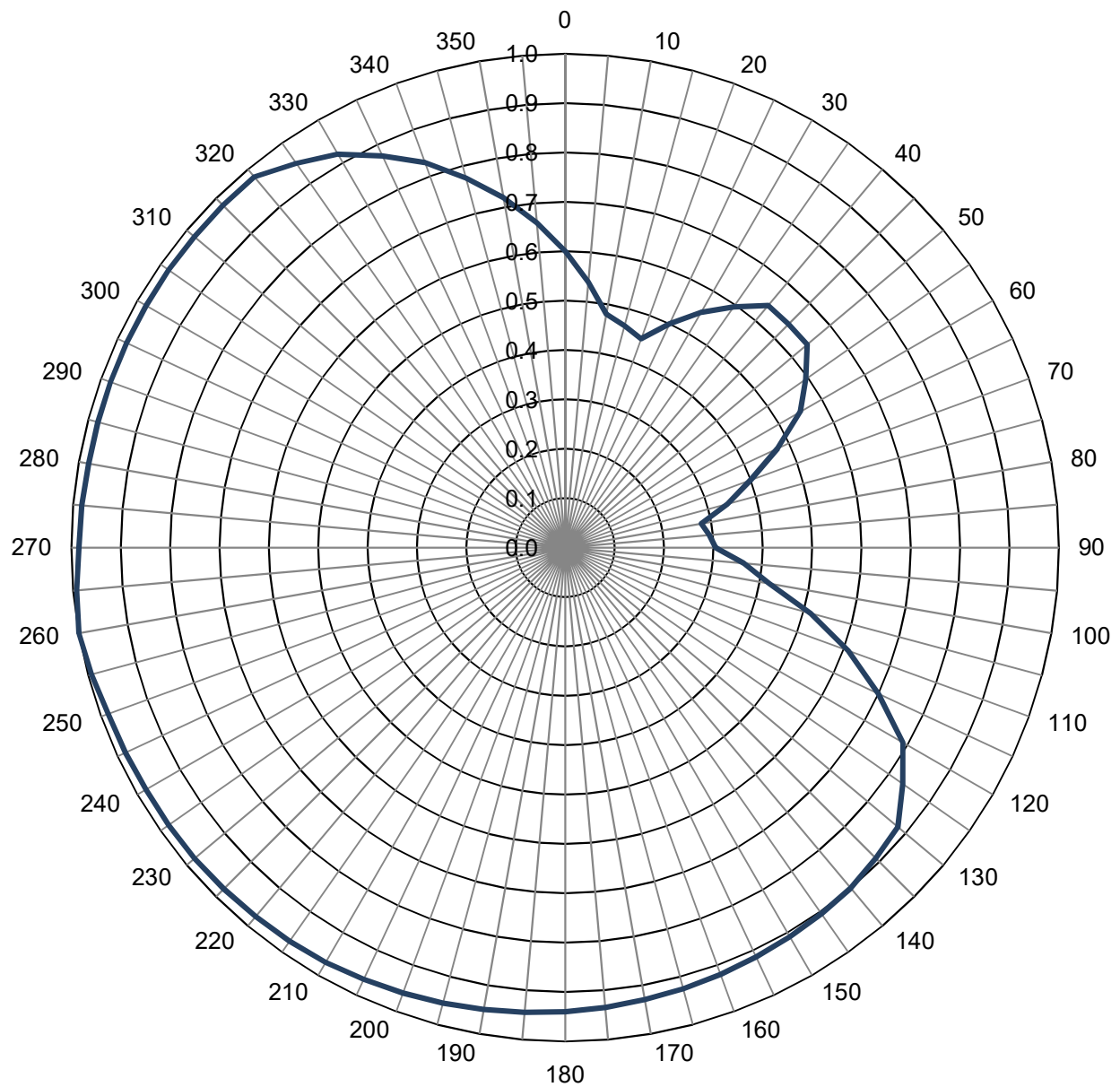
Typical Mounting Configuration Shown. Actual Configuration May Vary.



Azimuth Pattern

Type:	ATW-CX-H	Polarization:	Horizontal
Directivity:	1.49 numeric (1.74 dB)	Frequency:	32 (ATSC)
Peak(s) at:		Location:	Louisville, KY
		NOTE: Pattern shape and directivity may vary with channel and mounting configuration.	

Relative Field



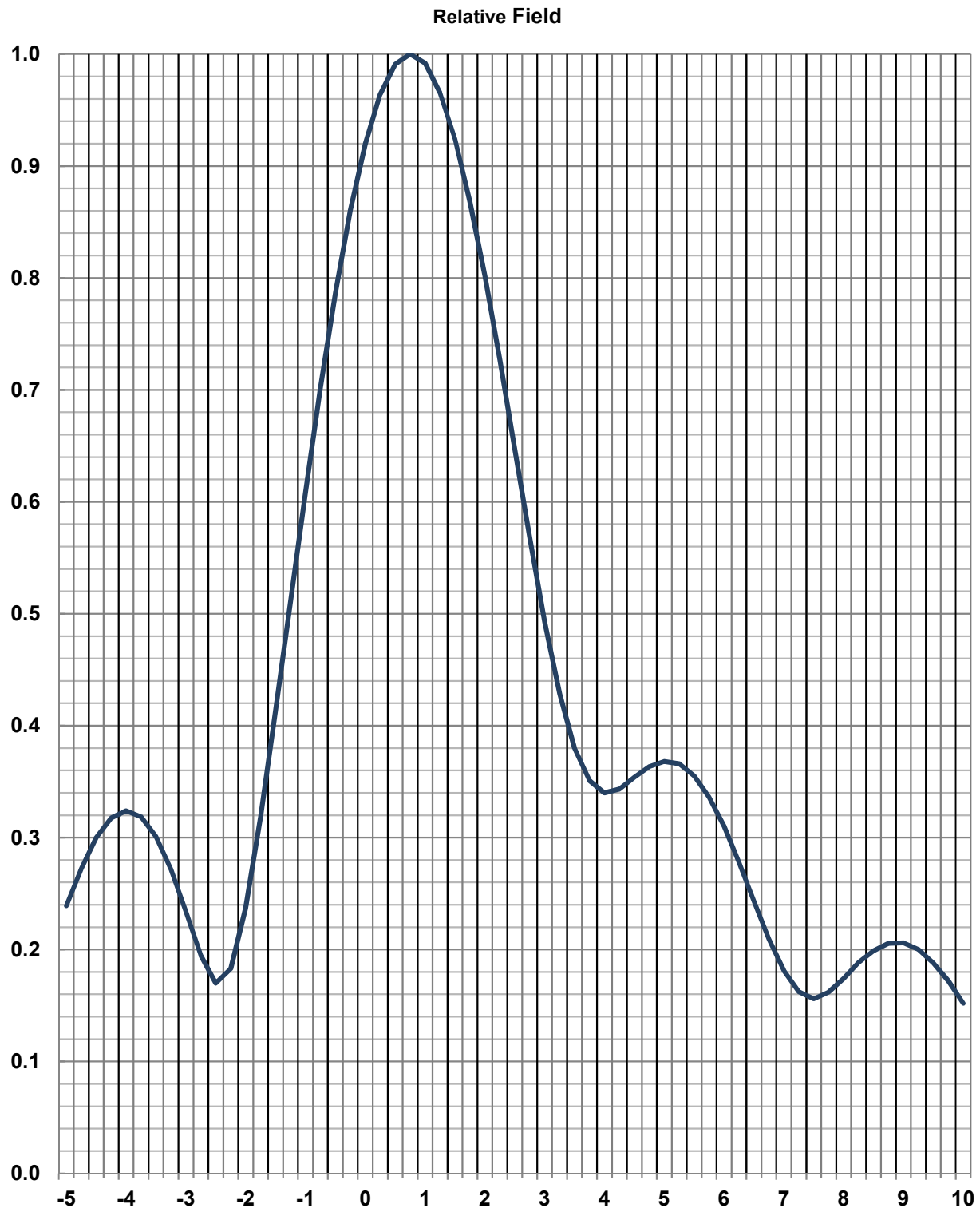
Tabulated Data for Azimuth Pattern

Type: ATW-CX-H

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0	0.600	-4.44	100	0.420	-7.54	200	0.960	-0.35	300	0.980	-0.18
2	0.576	-4.79	102	0.458	-6.78	202	0.962	-0.34	302	0.980	-0.18
4	0.552	-5.16	104	0.496	-6.09	204	0.964	-0.32	304	0.980	-0.18
6	0.528	-5.55	106	0.534	-5.45	206	0.966	-0.30	306	0.980	-0.18
8	0.504	-5.95	108	0.572	-4.85	208	0.968	-0.28	308	0.980	-0.18
10	0.480	-6.38	110	0.610	-4.29	210	0.970	-0.26	310	0.980	-0.18
12	0.474	-6.48	112	0.646	-3.80	212	0.971	-0.26	312	0.980	-0.18
14	0.468	-6.60	114	0.682	-3.32	214	0.972	-0.25	314	0.980	-0.18
16	0.462	-6.71	116	0.718	-2.88	216	0.973	-0.24	316	0.980	-0.18
18	0.456	-6.82	118	0.754	-2.45	218	0.974	-0.23	318	0.980	-0.18
20	0.450	-6.94	120	0.790	-2.05	220	0.975	-0.22	320	0.980	-0.18
22	0.470	-6.56	122	0.808	-1.85	222	0.976	-0.21	322	0.968	-0.28
24	0.490	-6.20	124	0.826	-1.66	224	0.977	-0.20	324	0.956	-0.39
26	0.510	-5.85	126	0.844	-1.47	226	0.978	-0.19	326	0.944	-0.50
28	0.530	-5.51	128	0.862	-1.29	228	0.979	-0.18	328	0.932	-0.61
30	0.550	-5.19	130	0.880	-1.11	230	0.980	-0.18	330	0.920	-0.72
32	0.568	-4.91	132	0.884	-1.07	232	0.980	-0.18	332	0.902	-0.90
34	0.586	-4.64	134	0.888	-1.03	234	0.980	-0.18	334	0.884	-1.07
36	0.604	-4.38	136	0.892	-0.99	236	0.980	-0.18	336	0.866	-1.25
38	0.622	-4.12	138	0.896	-0.95	238	0.980	-0.18	338	0.848	-1.43
40	0.640	-3.88	140	0.900	-0.92	240	0.980	-0.18	340	0.830	-1.62
42	0.640	-3.88	142	0.902	-0.90	242	0.981	-0.17	342	0.808	-1.85
44	0.640	-3.88	144	0.904	-0.88	244	0.982	-0.16	344	0.786	-2.09
46	0.640	-3.88	146	0.906	-0.86	246	0.983	-0.15	346	0.764	-2.34
48	0.640	-3.88	148	0.908	-0.84	248	0.984	-0.14	348	0.742	-2.59
50	0.640	-3.88	150	0.910	-0.82	250	0.985	-0.13	350	0.720	-2.85
52	0.622	-4.12	152	0.912	-0.80	252	0.988	-0.10	352	0.696	-3.15
54	0.604	-4.38	154	0.914	-0.78	254	0.991	-0.08	354	0.672	-3.45
56	0.586	-4.64	156	0.916	-0.76	256	0.994	-0.05	356	0.648	-3.77
58	0.568	-4.91	158	0.918	-0.74	258	0.997	-0.03	358	0.624	-4.10
60	0.550	-5.19	160	0.920	-0.72	260	1.000	0.00	360	0.600	-4.44
62	0.520	-5.68	162	0.922	-0.71	262	0.997	-0.03			
64	0.490	-6.20	164	0.924	-0.69	264	0.994	-0.05			
66	0.460	-6.74	166	0.926	-0.67	266	0.991	-0.08			
68	0.430	-7.33	168	0.928	-0.65	268	0.988	-0.10			
70	0.400	-7.96	170	0.930	-0.63	270	0.985	-0.13			
72	0.376	-8.50	172	0.932	-0.61	272	0.984	-0.14			
74	0.352	-9.07	174	0.934	-0.59	274	0.983	-0.15			
76	0.328	-9.68	176	0.936	-0.57	276	0.982	-0.16			
78	0.304	-10.34	178	0.938	-0.56	278	0.981	-0.17			
80	0.280	-11.06	180	0.940	-0.54	280	0.980	-0.18			
82	0.285	-10.90	182	0.942	-0.52	282	0.980	-0.18			
84	0.290	-10.75	184	0.944	-0.50	284	0.980	-0.18			
86	0.295	-10.60	186	0.946	-0.48	286	0.980	-0.18			
88	0.300	-10.46	188	0.948	-0.46	288	0.980	-0.18			
90	0.305	-10.31	190	0.950	-0.45	290	0.980	-0.18			
92	0.328	-9.68	192	0.952	-0.43	292	0.980	-0.18			
94	0.351	-9.09	194	0.954	-0.41	294	0.980	-0.18			
96	0.374	-8.54	196	0.956	-0.39	296	0.980	-0.18			
98	0.397	-8.02	198	0.958	-0.37	298	0.980	-0.18			

Elevation Pattern

Type:	ATW16H3H		Polarization:	Horizontal
Directivity:			Frequency:	32 (ATSC)
Main Lobe:	16.00 numeric	(12.04 dB)	Location:	Louisville, KY
Horizontal:	13.54 numeric	(11.32 dB)	Beam Tilt:	0.75 degrees



Tabulated Data for Elevation PatternType: ATW16H3H

-5 to 10 degrees in 0.25 degree increments.

10 to 90 degrees in 0.50 degree increments.

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-5.00	0.239	-12.43	7.25	0.163	-15.78	29.00	0.040	-27.96	53.50	0.055	-25.19	78.00	0.020	-33.98
-4.75	0.273	-11.29	7.50	0.156	-16.14	29.50	0.040	-27.96	54.00	0.062	-24.15	78.50	0.025	-32.04
-4.50	0.300	-10.46	7.75	0.162	-15.81	30.00	0.052	-25.68	54.50	0.067	-23.48	79.00	0.030	-30.46
-4.25	0.318	-9.97	8.00	0.174	-15.19	30.50	0.063	-24.01	55.00	0.067	-23.48	79.50	0.034	-29.37
-4.00	0.324	-9.79	8.25	0.189	-14.49	31.00	0.069	-23.22	55.50	0.064	-23.88	80.00	0.037	-28.64
-3.75	0.319	-9.94	8.50	0.199	-14.02	31.50	0.067	-23.48	56.00	0.057	-24.88	80.50	0.040	-27.96
-3.50	0.301	-10.43	8.75	0.206	-13.74	32.00	0.059	-24.58	56.50	0.048	-26.38	81.00	0.042	-27.54
-3.25	0.272	-11.32	9.00	0.206	-13.72	32.50	0.047	-26.56	57.00	0.038	-28.40	81.50	0.043	-27.33
-3.00	0.234	-12.62	9.25	0.200	-13.98	33.00	0.037	-28.64	57.50	0.030	-30.46	82.00	0.044	-27.13
-2.75	0.195	-14.22	9.50	0.188	-14.52	33.50	0.037	-28.64	58.00	0.028	-31.06	82.50	0.044	-27.13
-2.50	0.170	-15.39	9.75	0.172	-15.29	34.00	0.047	-26.56	58.50	0.034	-29.37	83.00	0.044	-27.13
-2.25	0.183	-14.75	10.00	0.152	-16.36	34.50	0.058	-24.73	59.00	0.044	-27.13	83.50	0.043	-27.33
-2.00	0.237	-12.51	10.50	0.114	-18.86	35.00	0.065	-23.74	59.50	0.054	-25.35	84.00	0.041	-27.74
-1.75	0.319	-9.92	11.00	0.099	-20.09	35.50	0.065	-23.74	60.00	0.063	-24.01	84.50	0.039	-28.18
-1.50	0.413	-7.68	11.50	0.115	-18.79	36.00	0.059	-24.58	60.50	0.069	-23.22	85.00	0.037	-28.64
-1.25	0.511	-5.83	12.00	0.136	-17.33	36.50	0.048	-26.38	61.00	0.073	-22.73	85.50	0.034	-29.37
-1.00	0.609	-4.31	12.50	0.145	-16.77	37.00	0.037	-28.64	61.50	0.074	-22.62	86.00	0.031	-30.17
-0.75	0.702	-3.07	13.00	0.136	-17.33	37.50	0.033	-29.63	62.00	0.071	-22.97	86.50	0.028	-31.06
-0.50	0.787	-2.08	13.50	0.112	-19.02	38.00	0.040	-27.96	62.50	0.066	-23.61	87.00	0.024	-32.40
-0.25	0.861	-1.30	14.00	0.084	-21.51	38.50	0.051	-25.85	63.00	0.059	-24.58	87.50	0.021	-33.56
0.00	0.920	-0.72	14.50	0.073	-22.73	39.00	0.060	-24.44	63.50	0.050	-26.02	88.00	0.017	-35.39
0.25	0.964	-0.32	15.00	0.086	-21.31	39.50	0.064	-23.88	64.00	0.039	-28.18	88.50	0.013	-37.72
0.50	0.991	-0.08	15.50	0.104	-19.66	40.00	0.062	-24.15	64.50	0.029	-30.75	89.00	0.009	-40.92
0.75	1.000	0.00	16.00	0.114	-18.86	40.50	0.055	-25.19	65.00	0.023	-32.77	89.50	0.004	-47.96
1.00	0.992	-0.07	16.50	0.109	-19.25	41.00	0.044	-27.13	65.50	0.024	-32.40	90.00	0.000	---
1.25	0.966	-0.30	17.00	0.092	-20.72	41.50	0.034	-29.37	66.00	0.032	-29.90			
1.50	0.924	-0.69	17.50	0.070	-23.10	42.00	0.032	-29.90	66.50	0.042	-27.54			
1.75	0.869	-1.22	18.00	0.058	-24.73	42.50	0.039	-28.18	67.00	0.053	-25.51			
2.00	0.802	-1.92	18.50	0.067	-23.48	43.00	0.050	-26.02	67.50	0.062	-24.15			
2.25	0.727	-2.78	19.00	0.084	-21.51	43.50	0.058	-24.73	68.00	0.071	-22.97			
2.50	0.647	-3.78	19.50	0.094	-20.54	44.00	0.063	-24.01	68.50	0.077	-22.27			
2.75	0.568	-4.92	20.00	0.093	-20.63	44.50	0.062	-24.15	69.00	0.082	-21.72			
3.00	0.493	-6.14	20.50	0.081	-21.83	45.00	0.057	-24.88	69.50	0.085	-21.41			
3.25	0.429	-7.36	21.00	0.063	-24.01	45.50	0.048	-26.38	70.00	0.086	-21.31			
3.50	0.380	-8.40	21.50	0.050	-26.02	46.00	0.037	-28.64	70.50	0.086	-21.31			
3.75	0.351	-9.09	22.00	0.053	-25.51	46.50	0.031	-30.17	71.00	0.083	-21.62			
4.00	0.340	-9.37	22.50	0.067	-23.48	47.00	0.033	-29.63	71.50	0.080	-21.94			
4.25	0.344	-9.28	23.00	0.079	-22.05	47.50	0.042	-27.54	72.00	0.075	-22.50			
4.50	0.354	-9.02	23.50	0.083	-21.62	48.00	0.052	-25.68	72.50	0.069	-23.22			
4.75	0.364	-8.79	24.00	0.076	-22.38	48.50	0.060	-24.44	73.00	0.062	-24.15			
5.00	0.368	-8.68	24.50	0.062	-24.15	49.00	0.064	-23.88	73.50	0.054	-25.35			
5.25	0.366	-8.73	25.00	0.047	-26.56	49.50	0.064	-23.88	74.00	0.046	-26.74			
5.50	0.355	-9.00	25.50	0.043	-27.33	50.00	0.059	-24.58	74.50	0.038	-28.40			
5.75	0.336	-9.47	26.00	0.053	-25.51	50.50	0.051	-25.85	75.00	0.029	-30.75			
6.00	0.310	-10.17	26.50	0.066	-23.61	51.00	0.041	-27.74	75.50	0.022	-33.15			
6.25	0.278	-11.12	27.00	0.074	-22.62	51.50	0.032	-29.90	76.00	0.015	-36.48			
6.50	0.243	-12.29	27.50	0.073	-22.73	52.00	0.029	-30.75	76.50	0.010	-40.00			
6.75	0.210	-13.58	28.00	0.065	-23.74	52.50	0.035	-29.12	77.00	0.010	-40.00			
7.00	0.181	-14.85	28.50	0.051	-25.85	53.00	0.045	-26.94	77.50	0.015	-36.48			

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
WDRB(TV), LOUISVILLE, KENTUCKY
CHANNEL 32 724 KW MAX ERP 361 METERS HAAT
AUGUST 2019

<u>Radial</u> <u>Bearing</u> (N ° E, T)	<u>Average*</u> <u>Elevation</u> <u>3.2 to 16.1 km</u> meters	<u>Effective</u> <u>Height</u> meters	<u>Depression</u> <u>Angle</u> degrees	<u>Effective</u> <u>Radiated</u> <u>Power</u> kW	<u>Distance to</u> <u>Contour F(50,90)</u> <u>41 dBu</u> km
0	219.9	338.2	0.509	261	89.4
10	207.8	350.3	0.518	167	87.2
20	195.8	362.3	0.527	147	87.3
30	183.7	374.4	0.536	219	91.3
40	171.6	386.5	0.545	297	94.4
50	163.5	394.6	0.550	297	95.0
60	159.2	398.9	0.553	219	92.9
70	155.0	403.1	0.556	116	88.6
80	150.8	407.3	0.559	57	83.9
90	146.5	411.6	0.562	67	85.3
100	144.7	413.4	0.563	128	89.8
110	142.9	415.2	0.564	269	95.5
120	141.1	417.0	0.566	452	100.0
130	139.4	418.7	0.567	561	102.1
140	140.2	417.9	0.566	586	102.5
150	143.6	414.5	0.564	600	102.4
160	147.0	411.1	0.562	613	102.3
170	150.4	407.7	0.559	626	102.3
180	153.8	404.3	0.557	640	102.2
190	175.9	382.2	0.542	653	100.6
200	198.0	360.1	0.526	667	99.1
210	220.1	338.0	0.509	681	97.4
220	242.2	315.9	0.492	688	95.3
230	251.8	306.3	0.485	695	94.2
240	249.0	309.1	0.487	695	94.6
250	246.1	312.0	0.489	702	95.0
260	243.3	314.9	0.492	724	95.6
270	240.4	317.7	0.494	702	95.6

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
WDRB(TV), LOUISVILLE, KENTUCKY
CHANNEL 32 724 KW MAX ERP 361 METERS HAAT
AUGUST 2019

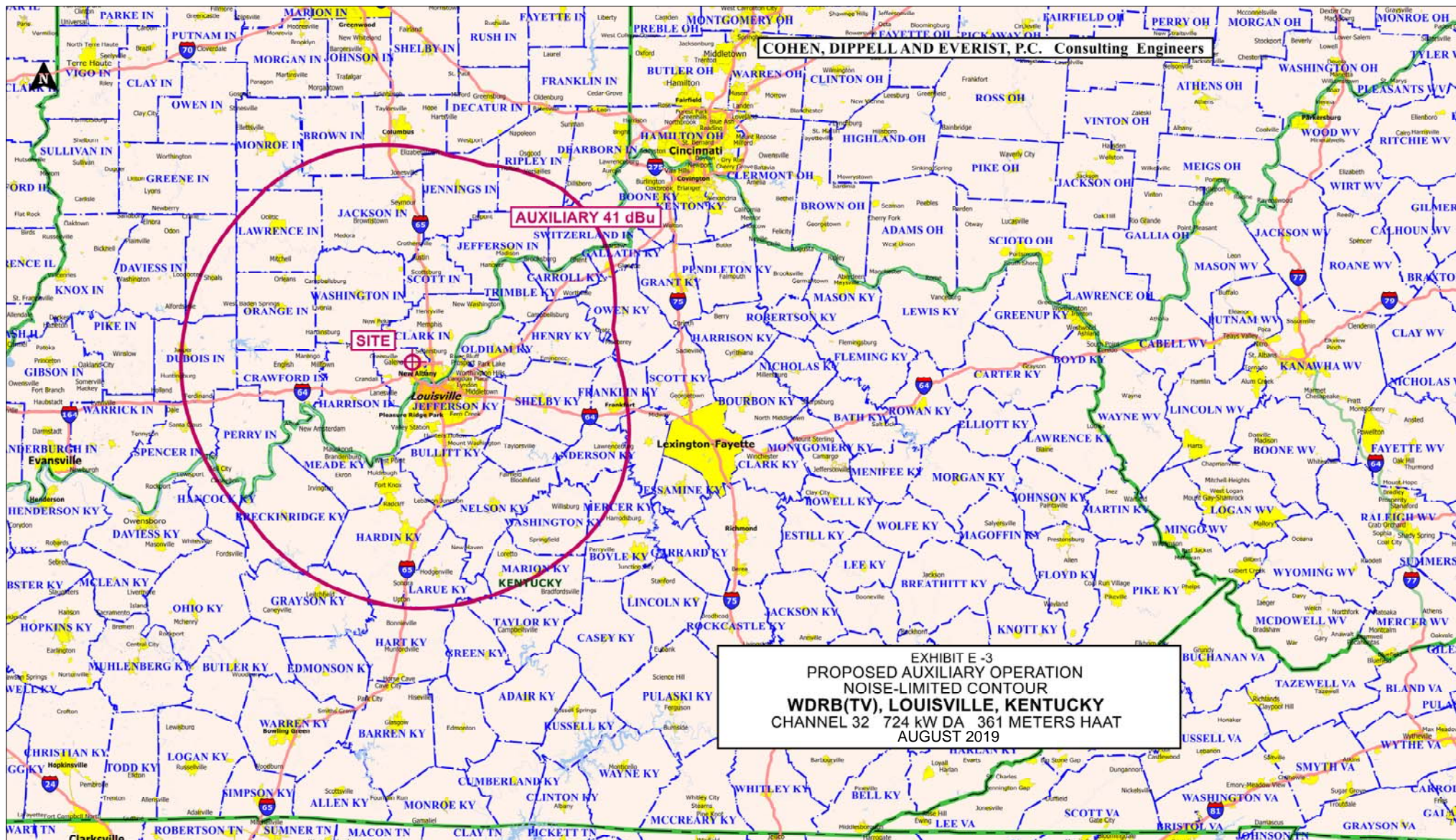
<u>Radial</u> <u>Bearing</u> (N ° E, T)	<u>Average*</u> <u>Elevation</u> <u>3.2 to 16.1 km</u> meters	<u>Effective</u> <u>Height</u> meters	<u>Depression</u> <u>Angle</u> degrees	<u>Effective</u> <u>Radiated</u> <u>Power</u> kW	<u>Distance to</u> <u>Contour F(50,90)</u> <u>41 dBu</u> km
280	244.6	313.5	0.490	695	95.1
290	248.8	309.3	0.487	695	94.6
300	253.0	305.1	0.484	695	94.1
310	257.2	300.9	0.481	695	93.6
320	254.9	303.2	0.482	695	93.9
330	246.2	311.9	0.489	613	93.8
340	237.4	320.7	0.496	499	92.9
350	228.7	329.4	0.503	375	91.4

*Based on data from FCC one-second data base.

DTV Channel 32 (578-584 MHz)
Center of Radiation 558.06 meters AMSL
Effective Radiated Power 724 kW
Antenna Height Above Average Terrain 361 meters

North Latitude: 38° 21' 01.0"
West Longitude: 85° 50' 57.0"

(NAD-27)



COHEN, DIPPELL AND EVERIST, P.C. Consulting Engineers

41 dBu

AUXILIARY 41 dBu

SITE

EXHIBIT E-4
NOISE-LIMITED CONTOURS
OF AUTHORIZED (C.P.) INCENTIVE AUCTION CHANNEL
FULL SERVICE TELEVISION
WDRB(TV), LOUISVILLE, KENTUCKY
CHANNEL 32 1000 kW 390.4 METERS HAAT
AND
PROPOSED AUXILIARY OPERATION
WDRB(TV), LOUISVILLE, KENTUCKY
CHANNEL 32 724 kW 340 METERS HAAT
AUGUST 2019

