

ENGINEERING STATEMENT
APPLICATION FOR
RE MODIFICATION OF LICENSE
ON BEHALF OF
LIMA COMMUNICATIONS CORPORATION
WLIO, LIMA, OHIO
CHANNEL 8 50 KW MAX ERP 170 METERS HAAT

NOVEMBER 2017

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)

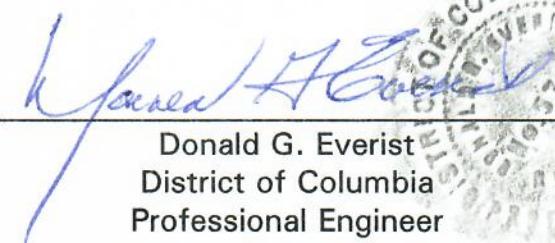
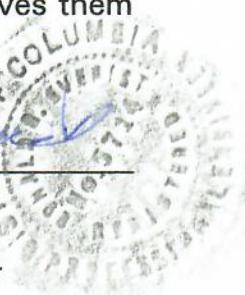
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

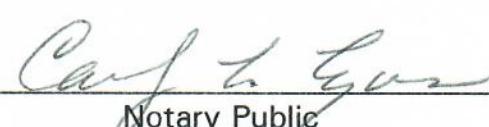
That the attached engineering report was prepared by him or under his supervision and direction and

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 27th day of November, 2017.




Carolyn L. Lyons
Notary Public

My Commission Expires: 2/28/2018

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WLIO, LIMA, OHIO

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Introduction

This engineering statement has been prepared on behalf of Lima Communications Corporation, licensee of WLIO. The purpose of this engineering statement is to accompany its request for modification of license. Included with this report are the exhibits referred to in this text along with FCC Form 2100, Schedule A.

Lima Communications Corporation operates television station WLIO on DTV Channel 8 with a maximum visual effective radiated power (“ERP”) of 50 kW maximum directional (circular polarization) and an antenna height above average terrain (“HAAT”) of 170 meters (557.7 feet). WLIO desires to relocate its transmitting facility to the proposed tower that will be located approximately 3.3 km at an azimuth angle of N 15.7° E. WLIO proposes to modify its currently licensed DTV facilities to 50 kW ERP (circular polarization) on Channel 8 at an HAAT of 170 meters.

Proposed Tower

The DTV antenna will be top-mounted on the proposed tower having a total overall structure height above ground of 182.9 meters. The proposed tower will be registered once FAA concurrence is received.

The geographic coordinates of the proposed tower are as follows:

North Latitude: 40° 46' 34.9"

West Longitude: 84° 07' 15.9"

NAD-83

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WLIO, LIMA, OHIO

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Equipment Data

An ERI, Model ATW4V3-CTP-8H (or equivalent) antenna, with 0.75° electrical beam tilt will be installed. The vertical plane pattern and other exhibits required by Section 73.625(c) are included in Exhibit E-2.

Elevation Data

Elevation of site above mean sea level	256.9 meters (842.7 feet)
Overall height above ground of the existing antenna structure (including beacon)	182.9 meters (600 feet)
Overall height above mean sea level of proposed tower (including beacon)	439.7 meters (1442.7 feet)
Center of radiation of Channel 8 antenna above ground	169.5 meters (556 feet)
Center of radiation of Channel 8 antenna above mean sea level	426.3 meters (1398.6 feet)
Antenna height above average terrain	170 meters

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

Interference Analysis

A study of predicted interference caused by the proposed WLIO operation on Channel 8 digital operation has been performed using the Longley-Rice program for which the source data has been posted by the Commission on its website at fcc.gov/oet/tvstudy. Comparison of service/interference areas and population indicates this model closely matches the FCC's digital TVStudy 2.2 evaluation program. Best efforts have been made to use data and calculation identical to the FCC's program. The model employs the Longley-Rice propagation methodology

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and evaluates in grid cells of approximately 1 sq. km. Using one-second terrain data sampled approximately every 1.0 km at one-degree azimuth intervals with 2010 census centroids, all studies are based upon data in the Commission's current Licensing and Management System ("LMS") database update of the FCC's engineering database.

Contour Data

Utilizing the formula in Section 73.625(b)(2) for the effective heights along each radial, the depression angle A_h , 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.

Table I provides the distances calculated by TVStudy 2.2 along each radial spaced every ten degrees in azimuth to the predicted F(50,90) 36 dBu contour, the effective radiated power and the effective antenna heights. The predicted 36 dBu contour determined from these distances are shown on the attached map (Exhibit E-4).

Coverage

[WLIO transmission facilities are located just outside the city limits. A coverage map (Exhibit E-4) has been provided.]

Other Licensed and Broadcast Facilities

There are no AM stations within 3.22 km of the proposed WLIO tower site. There are no FM broadcast stations operating within 100 meters of the proposed site. The only other proposed TV broadcast station to operate within 100 meters of the proposed site is WOHL.

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

Radio Frequency Field Level

The DTV antenna will be mounted on the proposed tower with 169.5 meters radiation center above ground level. WLIO and WOHL are the only broadcast station which currently are proposed to operate at the proposed site.

Pursuant to OET Bulletin No. 65, dated August 1997, the RFF study will consider the following proposed WLIO 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 + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

WLIO DTV Facility

Channel 8	Freq:	180-186 MHz Range
	ERP =	100,000 watts
	Polarization =	circular
	RCAGL - 2 meters =	167.5 meters

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WLIO, LIMA, OHIO

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WLIO proposes to utilize an ERI, Model ATW4V3-CTP-8H antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane pattern is included in Exhibit E-2. Based on this plot, the field factor will be less than 0.130 at any angle greater than 80 degrees below the horizon. A value of 0.13 will be used in the calculation.

$$\begin{aligned} S &= \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} & \text{Tot ERP} &= 100,000 \text{ watts (Circular Only)} \\ F &= 0.130 & R &= 167.5 \text{ meters} \\ F &= 0.130 & & \text{(field factor)} \end{aligned}$$

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

Therefore WLIO contributes less than 3 $\mu\text{W/cm}^2$ at 2 meters above the ground. The limit for an uncontrolled environment is 200 $\mu\text{W/cm}^2$ for a station broadcasting in the 180-186 MHz range.

Therefore:

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

FCC Rule, Section 1.1307

Authorized personnel and rigging contractors will be alerted to the potential zone of high radio frequency field levels 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 or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

ABOVE MEAN SEA LEVEL

ABOVE GROUND

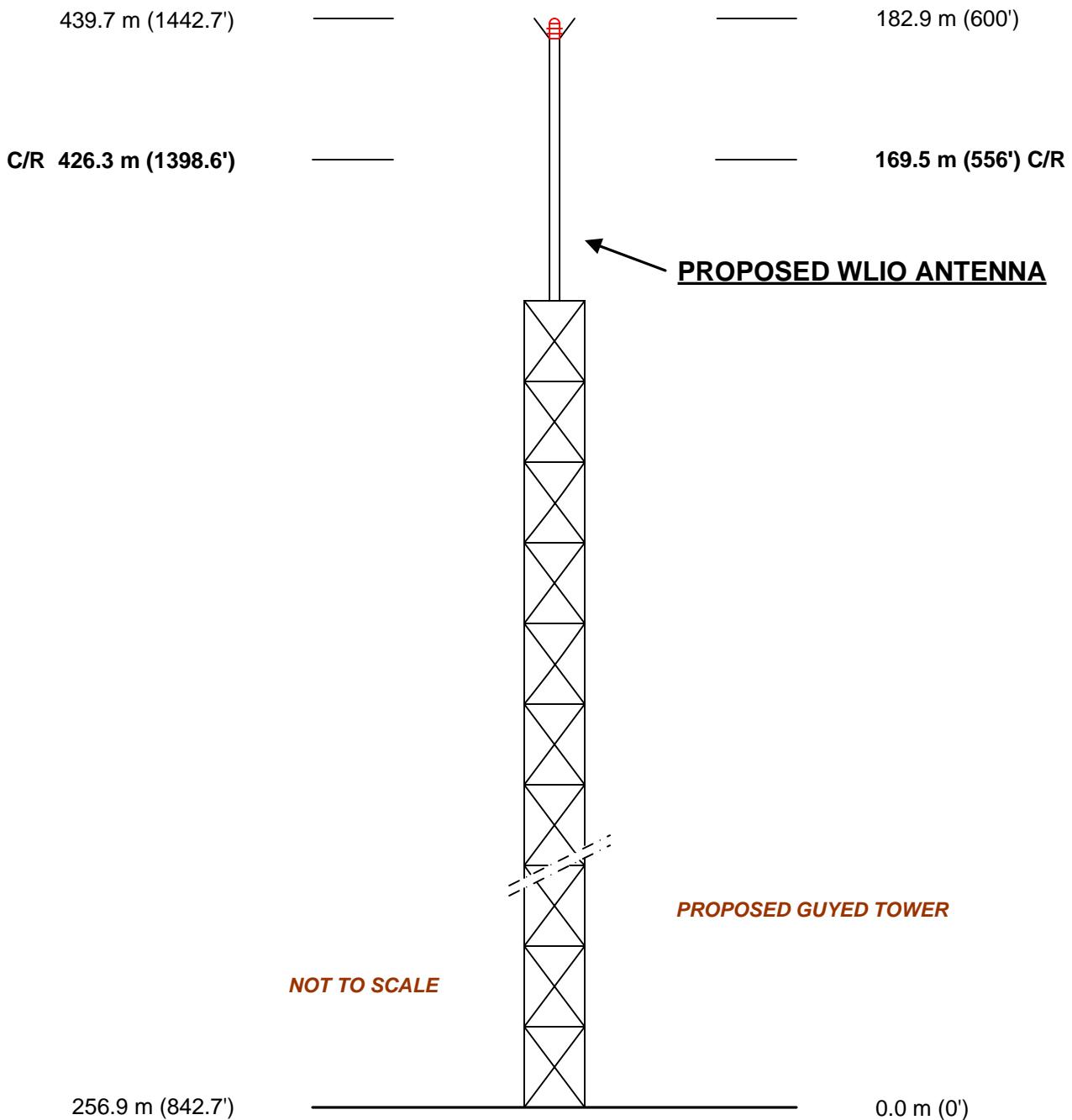


EXHIBIT E - 1
VERTICAL SKETCH
FOR THE PROPOSED OPERATION OF
WLIO, LIMA, OHIO
NOVEMBER 2017

EXHIBIT E-2
ANTENNA MANUFACTURER DATA

**Preliminary Specification for
TRASAR® Top Mounted
High Band VHF Circularly Polarized
Coaxial Slotted Array Television Antenna**

**WLIO, RF Channel 8
Block Communications, Lima, OH**

September 13, 2017

**Antenna Model:
ATW4V3-CTP-8H**

**Specification Number
20171121-403**

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® Top Mounted
High Band VHF Circularly Polarized
Coaxial Slotted Array Television Antenna**

Electrical Characteristics:

Channel:	8				
Frequency:	180 MHz to 186 MHz				
Service:	ATSC				
Azimuth Pattern Number:	Horizontal Polarization	ATW-P			
	Vertical Polarization	ATW-P-V			
Elevation Pattern Number:	Horizontal Polarization	ATW4V3H			
	Vertical Polarization	ATW4V3V			
Azimuth Directivity:	Horizontal Polarization	2.00	(3.01 dB)		
	Vertical Polarization	2.00	(3.01 dB)		
Elevation Directivity:	Horizontal Polarization	4.00	(6.02 dBd)		
	Vertical Polarization	4.00	(6.02 dBd)		
Peak Power Gain:	Horizontal Polarization	4.00	(6.02 dBd)		
	Vertical Polarization	4.00	(6.02 dBd)		
Gain at Horizontal:	Horizontal Polarization	3.97	(5.99 dBd)		
	Vertical Polarization	3.97	(5.99 dBd)		
Vertical/Horizontal Ratio:		1.00			
Electrical Beam Tilt:	0.75 Degrees				
Input Power Required:	12.50 kW	(10.97 dBk)			
RF Input:	3-1/8-inch EIA, 50 Ω, flanged male				
Input Power Rating (maximum):	33 kW Average Power, 8VSB				
Antenna VSWR (maximum):	1.10 Over 6 MHz Channel				

**Preliminary Specification for
TRASAR® Top Mounted
High Band VHF Circularly Polarized
Coaxial Slotted Array Television Antenna**

Mechanical Characteristics:

Mounting Configuration:	Top Mounted		
Height of Antenna (D_B):	27.7 feet	(8.4 meters)	
Height of Center of Radiation (B_B):	13.8 feet	(4.2 meters)	
Deicing:	Fully enclosed pressurized radome		
Radome Diameter (C_B):	28.50 inches (723.9 millimeters)		
Radome Color:	Aviation Orange		
Climbing Device:	Not Applicable		
Calculated Weight ¹ :	No Ice	7075.0 lb	3209.2 kg
	0.5inch (13 mm) ice	8000.0 lb	3628.7 kg
Windload Data ³	EPA	No Ice	57.6 ft ² (5.4 m ²)
		0.5inch (13 mm) ice	107.6 ft ² (10.0 m ²)
Effective Moment Arm ³ :	EPA	No Ice	13.83 feet (4.22 meters)
		0.5inch (13 mm) ice	13.83 feet (4.22 meters)

MOUNTING FLANGE BOLT CIRCLE2: Quantity (16), 1.38 inch holes for 1.25 inch bolts, equally spaced on a 21.50 inch bolt circle.

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, lightning spurs, and beacon only. Custom mounting brackets/adapters and/or antenna input section are NOT included.

2) Preliminary antenna design based on a wind speed of 90 miles per hour (MPH) with no ice and 40 MPH with 1.00-inches of design radial ice (2.63-inches of factored ice at antenna, tiz) with a height above ground level (HAGL) of 500 feet per ANSI/TIA-222-G. Structure Class II, Exposure Category C and Topographic Category I.

3) The mounting flange specified is the standard ERI mounting flange used for this antenna configuration. In those instances where an existing top mounted antenna is being replaced, the antenna supplied will be designed with a mounting flange to match that of the existing antenna bolt pattern unless electrical and/or mechanical requirements for the new antenna preclude the matching flange. Customer shall be responsible for supplying existing flange bolt pattern details when requesting a custom matching flange on the new antenna.

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

WLIO
Block Communications
Lima, OH
ATW4V3-CTP-8H

RF Channel: 8

Antenna Parameters

Azimuth Directivity:

Horizontal:	2.00	(3.01 dB)
Vertical:	2.00	(3.01 dB)

Effective Radiated Power:

Horizontal:	50.00 kW	(16.99 dBk)
Vertical:	50.00 kW	(16.99 dBk)

Elevation Directivity:

Horizontal:	4.00	(6.02 dB)
Vertical:	4.00	(6.02 dB)

Power Gain:

Horizontal:	4.00 numeric	(6.02 dBd)
Vertical:	4.00 numeric	(6.02 dBd)

Transmission Line

Vertical Run:

Type:	3-1/8-inch EIA, 50 Ω	164.6 meters
Length:	540 feet	
Attenuation:	0.130 dB/100 feet	

Antenna Input Power:

12.50 kW	(10.97 dBk)
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Horizontal Run:

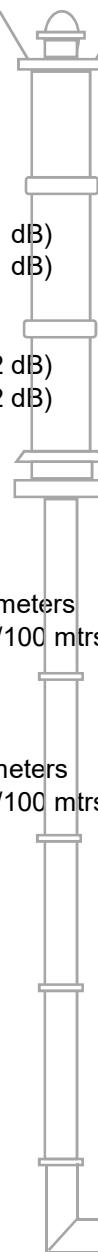
Type:	3-1/8-inch EIA, 50 Ω	30.5 meters
Length:	100 feet	
Attenuation:	0.130 dB/100 feet	

Transmission Line Losses:

-2.64 kW	(0.833 dB)
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Total Losses: 0.833 dB

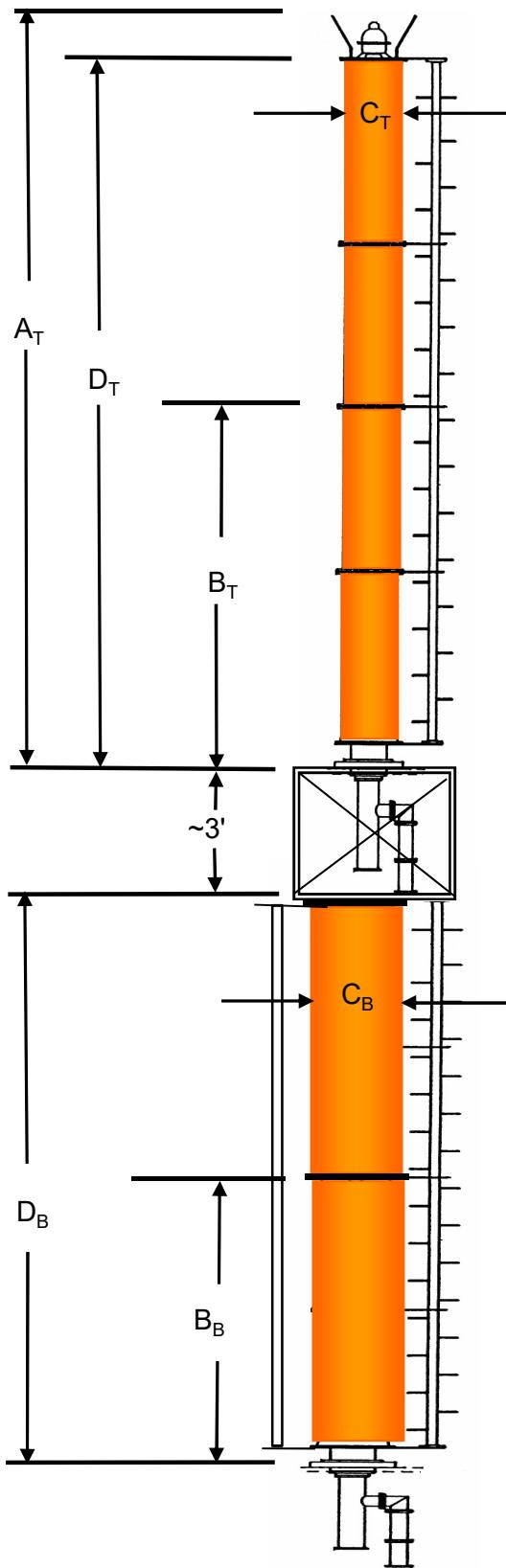
Line Efficiency: 82.54%



Transmitter Power Output:

15.14 kW
(11.80 dBk)

Typical Mounting Configuration Shown. Actual Configuration May Vary.



PRELIMINARY LINEAR STACK MECHANICAL DATA

WOHL Atop WLIO:

Total Stack Length = 48.46 ft (51.96 ft with beacon/spurs)
 Calculated Total Weight (No Ice) = 12,150 lbs
 Calculated Total Weight (2" Ice) = 20,230 lbs
 Calculated Effective Projected Area (No Ice) = 102.8 ft²
 Calculated Effective Projected Area (2" Ice) = 209.9 ft²
 Effective Moment Arm (No Ice) = 25.10 ft
 Effective Moment Arm (2" Ice) = 24.81 ft

Note: Preliminary antenna stack design based on a wind speed of 90 miles per hour (MPH) with no ice and 40 MPH with 1.00-inches of design radial ice (2.63-inches of factored ice at antenna, tiz) with a height above ground level (HAGL) of 500 feet at the base of the stack per ANSI/TIA-222-G. Structure Class II, Exposure Category C and Topographic Category I. Weight and wind area values include both antenna arrays, a 3 foot wedding cake interface, four lightning spurs, and a standard beacon.

WOHL-CD ATW6H3-CTO-15H

Height of Antenna (D_T):	17.3 feet
Height of Center of Radiation (B_T):	8.7 feet
Overall Height (A_T):	20.8 feet
Radome Diameter (C_T):	18.40 inches

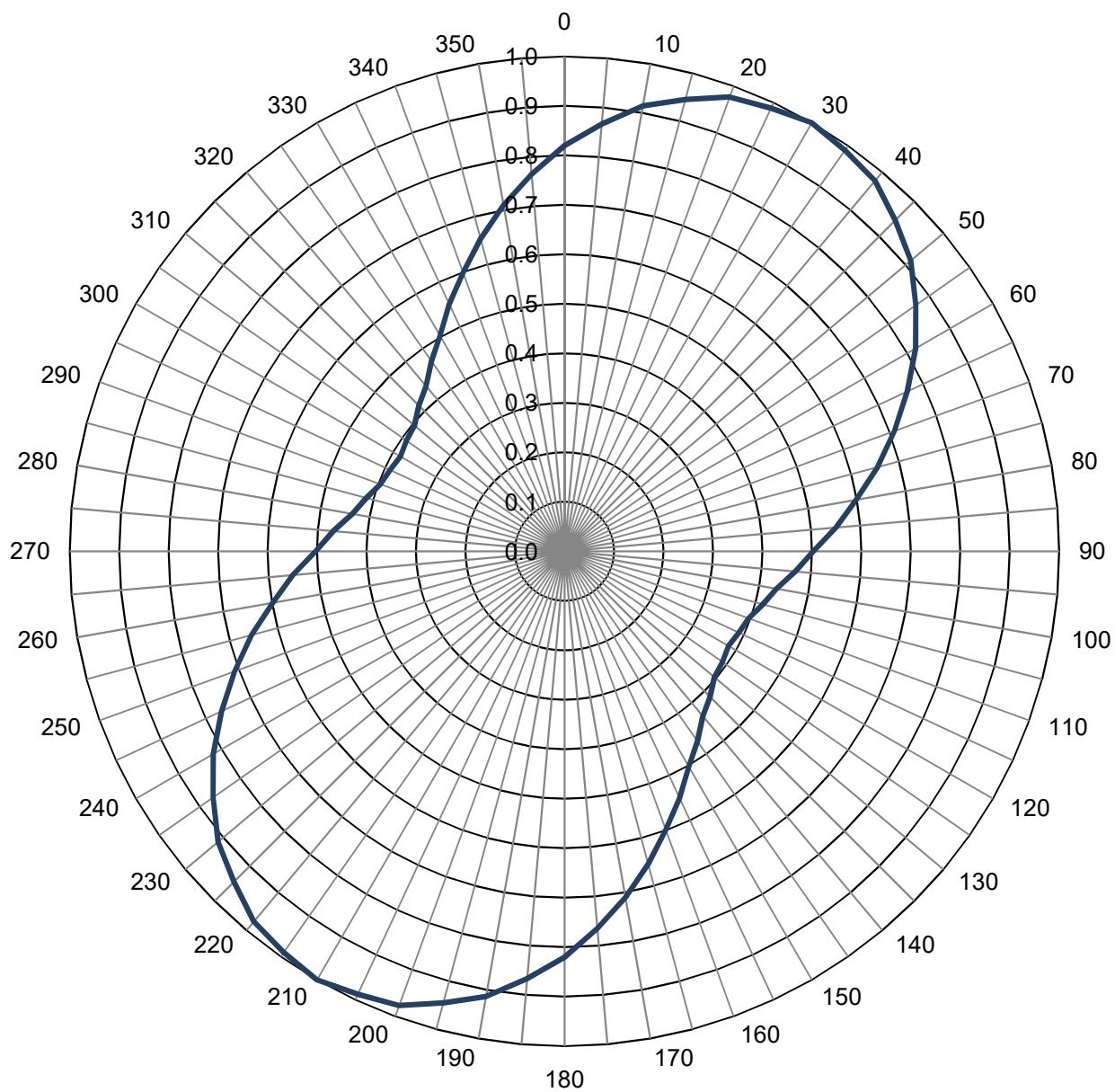
WLIO ATW4V3-CTP-8H

Height of Antenna (D_B):	27.7 feet
Height of Center of Radiation (B_B):	13.8 feet
Radome Diameter (C_B):	28.50 inches

Azimuth Pattern

Type:	ATW-P	Polarization:	Horizontal
Directivity:	2.00 numeric	Frequency:	8 (ATSC)
Peak(s) at:	(3.01 dB)	Location:	Lima, OH
NOTE: Pattern shape and directivity may vary with channel and mounting configuration.			

Relative Field



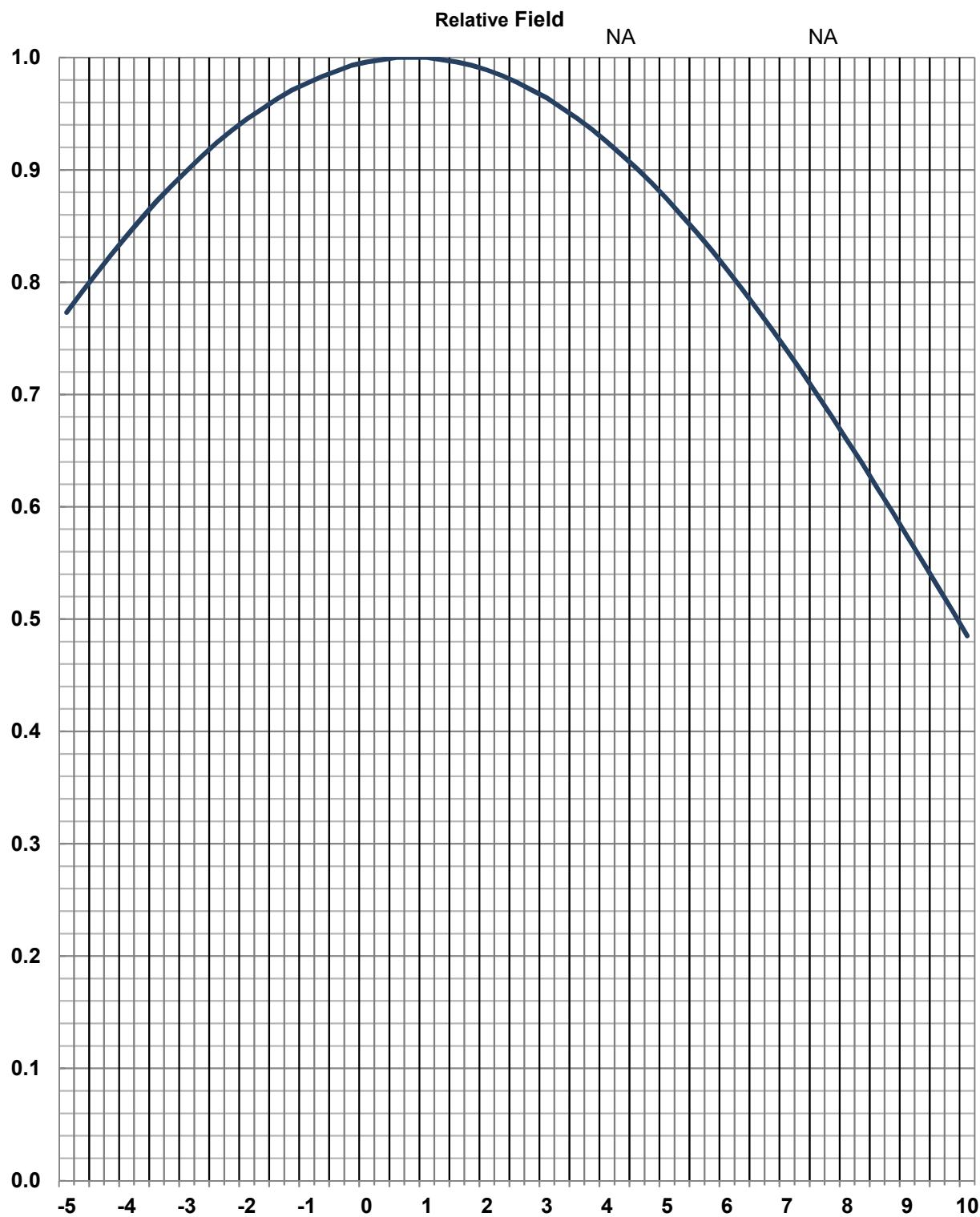
Tabulated Data for Azimuth Pattern

Type: ATW-P

Angle	Field	dB									
0	0.820	-1.72	100	0.435	-7.23	200	0.977	-0.20	300	0.383	-8.34
2	0.839	-1.52	102	0.427	-7.39	202	0.982	-0.16	302	0.386	-8.27
4	0.858	-1.33	104	0.419	-7.56	204	0.986	-0.12	304	0.388	-8.22
6	0.876	-1.15	106	0.412	-7.70	206	0.991	-0.08	306	0.391	-8.16
8	0.895	-0.96	108	0.404	-7.87	208	0.995	-0.04	308	0.393	-8.11
10	0.914	-0.78	110	0.396	-8.05	210	1.000	0.00	310	0.396	-8.05
12	0.927	-0.66	112	0.393	-8.11	212	0.995	-0.04	312	0.404	-7.87
14	0.939	-0.55	114	0.391	-8.16	214	0.991	-0.08	314	0.412	-7.70
16	0.952	-0.43	116	0.388	-8.22	216	0.986	-0.12	316	0.419	-7.56
18	0.964	-0.32	118	0.386	-8.27	218	0.982	-0.16	318	0.427	-7.39
20	0.977	-0.20	120	0.383	-8.34	220	0.977	-0.20	320	0.435	-7.23
22	0.982	-0.16	122	0.386	-8.27	222	0.964	-0.32	322	0.449	-6.96
24	0.986	-0.12	124	0.388	-8.22	224	0.952	-0.43	324	0.462	-6.71
26	0.991	-0.08	126	0.391	-8.16	226	0.939	-0.55	326	0.476	-6.45
28	0.995	-0.04	128	0.393	-8.11	228	0.927	-0.66	328	0.489	-6.21
30	1.000	0.00	130	0.396	-8.05	230	0.914	-0.78	330	0.503	-5.97
32	0.995	-0.04	132	0.404	-7.87	232	0.895	-0.96	332	0.522	-5.65
34	0.991	-0.08	134	0.412	-7.70	234	0.876	-1.15	334	0.541	-5.34
36	0.986	-0.12	136	0.419	-7.56	236	0.858	-1.33	336	0.561	-5.02
38	0.982	-0.16	138	0.427	-7.39	238	0.839	-1.52	338	0.580	-4.73
40	0.977	-0.20	140	0.435	-7.23	240	0.820	-1.72	340	0.599	-4.45
42	0.964	-0.32	142	0.449	-6.96	242	0.798	-1.96	342	0.621	-4.14
44	0.952	-0.43	144	0.462	-6.71	244	0.776	-2.20	344	0.643	-3.84
46	0.939	-0.55	146	0.476	-6.45	246	0.754	-2.45	346	0.666	-3.53
48	0.927	-0.66	148	0.489	-6.21	248	0.732	-2.71	348	0.688	-3.25
50	0.914	-0.78	150	0.503	-5.97	250	0.710	-2.97	350	0.710	-2.97
52	0.895	-0.96	152	0.522	-5.65	252	0.688	-3.25	352	0.732	-2.71
54	0.876	-1.15	154	0.541	-5.34	254	0.666	-3.53	354	0.754	-2.45
56	0.858	-1.33	156	0.561	-5.02	256	0.643	-3.84	356	0.776	-2.20
58	0.839	-1.52	158	0.580	-4.73	258	0.621	-4.14	358	0.798	-1.96
60	0.820	-1.72	160	0.599	-4.45	260	0.599	-4.45	360	0.820	-1.72
62	0.798	-1.96	162	0.621	-4.14	262	0.580	-4.73			
64	0.776	-2.20	164	0.643	-3.84	264	0.561	-5.02			
66	0.754	-2.45	166	0.666	-3.53	266	0.541	-5.34			
68	0.732	-2.71	168	0.688	-3.25	268	0.522	-5.65			
70	0.710	-2.97	170	0.710	-2.97	270	0.503	-5.97			
72	0.688	-3.25	172	0.732	-2.71	272	0.489	-6.21			
74	0.666	-3.53	174	0.754	-2.45	274	0.476	-6.45			
76	0.643	-3.84	176	0.776	-2.20	276	0.462	-6.71			
78	0.621	-4.14	178	0.798	-1.96	278	0.449	-6.96			
80	0.599	-4.45	180	0.820	-1.72	280	0.435	-7.23			
82	0.580	-4.73	182	0.839	-1.52	282	0.427	-7.39			
84	0.561	-5.02	184	0.858	-1.33	284	0.419	-7.56			
86	0.541	-5.34	186	0.876	-1.15	286	0.412	-7.70			
88	0.522	-5.65	188	0.895	-0.96	288	0.404	-7.87			
90	0.503	-5.97	190	0.914	-0.78	290	0.396	-8.05			
92	0.489	-6.21	192	0.927	-0.66	292	0.393	-8.11			
94	0.476	-6.45	194	0.939	-0.55	294	0.391	-8.16			
96	0.462	-6.71	196	0.952	-0.43	296	0.388	-8.22			
98	0.449	-6.96	198	0.964	-0.32	298	0.386	-8.27			

Elevation Pattern

Type:	ATW4V3H	Polarization:	Horizontal
Directivity:		Frequency:	8 (ATSC)
Main Lobe:	4.00 numeric (6.02 dB)	Location:	Lima, OH
Horizontal:	3.97 numeric (5.99 dB)	Beam Tilt:	0.75 degrees



Tabulated Data for Elevation Pattern

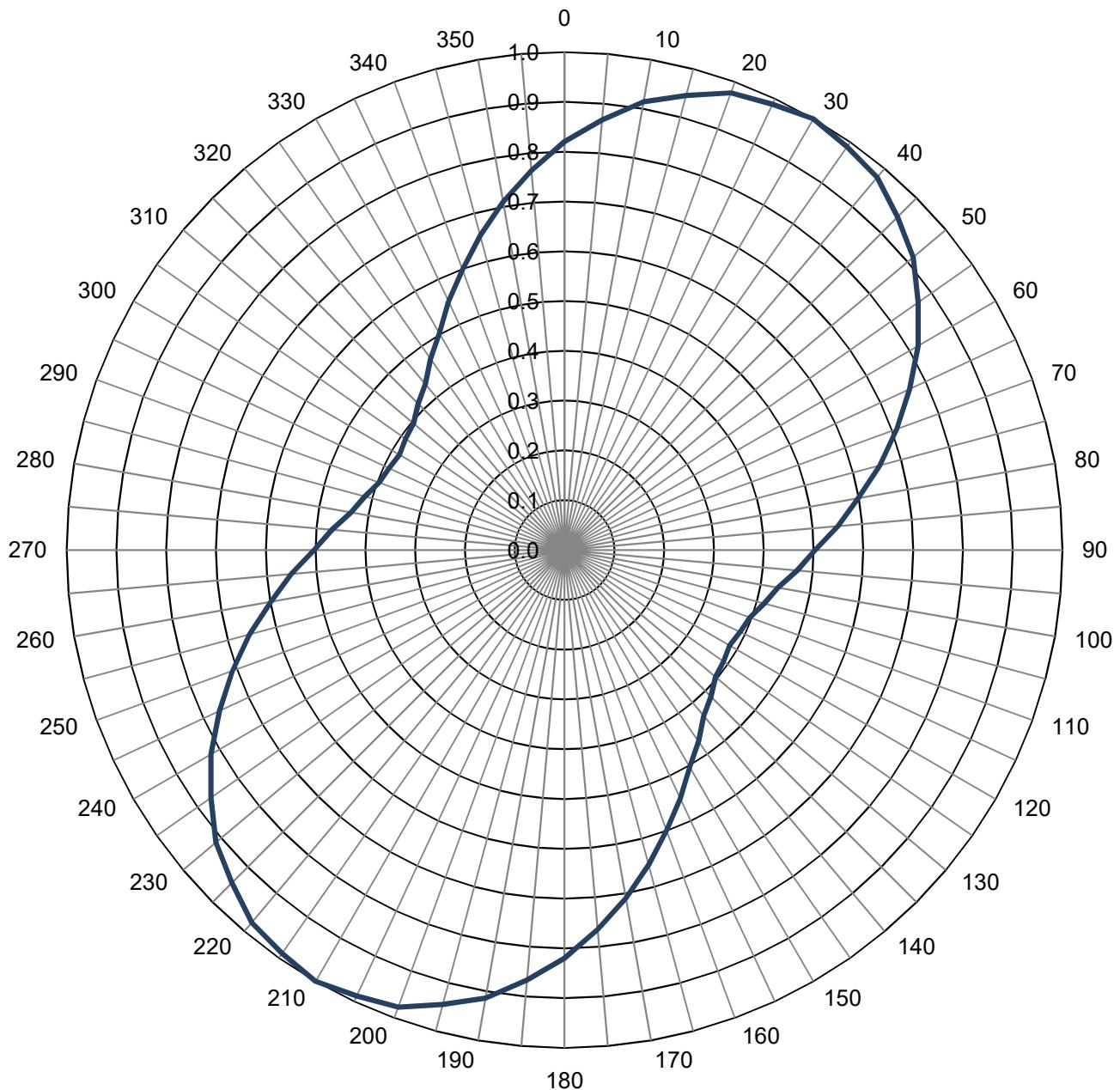
Type: ATW4V3H -5 to 10 degrees in 0.25 degree increments.
 10 to 90 degrees in 0.50 degree increments.

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-5.00	0.773	-2.24	7.25	0.720	-2.85	29.00	0.123	-18.20	53.50	0.019	-34.42	78.00	0.141	-17.02
-4.75	0.791	-2.04	7.50	0.700	-3.10	29.50	0.105	-19.58	54.00	0.031	-30.17	78.50	0.136	-17.33
-4.50	0.808	-1.85	7.75	0.680	-3.35	30.00	0.087	-21.21	54.50	0.042	-27.54	79.00	0.130	-17.72
-4.25	0.825	-1.67	8.00	0.659	-3.62	30.50	0.069	-23.22	55.00	0.053	-25.51	79.50	0.125	-18.06
-4.00	0.841	-1.50	8.25	0.639	-3.89	31.00	0.052	-25.68	55.50	0.064	-23.88	80.00	0.120	-18.42
-3.75	0.857	-1.34	8.50	0.617	-4.19	31.50	0.037	-28.64	56.00	0.075	-22.50	80.50	0.114	-18.86
-3.50	0.872	-1.19	8.75	0.596	-4.50	32.00	0.028	-31.06	56.50	0.085	-21.41	81.00	0.108	-19.33
-3.25	0.886	-1.05	9.00	0.574	-4.82	32.50	0.030	-30.46	57.00	0.095	-20.45	81.50	0.102	-19.83
-3.00	0.899	-0.92	9.25	0.552	-5.16	33.00	0.041	-27.74	57.50	0.105	-19.58	82.00	0.097	-20.26
-2.75	0.912	-0.80	9.50	0.530	-5.51	33.50	0.055	-25.19	58.00	0.114	-18.86	82.50	0.091	-20.82
-2.50	0.924	-0.69	9.75	0.508	-5.88	34.00	0.070	-23.10	58.50	0.123	-18.20	83.00	0.085	-21.41
-2.25	0.935	-0.58	10.00	0.485	-6.29	34.50	0.085	-21.41	59.00	0.131	-17.65	83.50	0.079	-22.05
-2.00	0.945	-0.49	10.50	0.440	-7.13	35.00	0.099	-20.09	59.50	0.139	-17.14	84.00	0.072	-22.85
-1.75	0.954	-0.41	11.00	0.395	-8.07	35.50	0.113	-18.94	60.00	0.146	-16.71	84.50	0.066	-23.61
-1.50	0.963	-0.33	11.50	0.351	-9.09	36.00	0.126	-17.99	60.50	0.153	-16.31	85.00	0.060	-24.44
-1.25	0.971	-0.26	12.00	0.307	-10.26	36.50	0.138	-17.20	61.00	0.160	-15.92	85.50	0.054	-25.35
-1.00	0.977	-0.20	12.50	0.264	-11.57	37.00	0.148	-16.59	61.50	0.166	-15.60	86.00	0.048	-26.38
-0.75	0.983	-0.15	13.00	0.223	-13.03	37.50	0.158	-16.03	62.00	0.171	-15.34	86.50	0.041	-27.74
-0.50	0.988	-0.10	13.50	0.184	-14.70	38.00	0.167	-15.55	62.50	0.176	-15.09	87.00	0.035	-29.12
-0.25	0.993	-0.06	14.00	0.148	-16.59	38.50	0.174	-15.19	63.00	0.181	-14.85	87.50	0.029	-30.75
0.00	0.996	-0.03	14.50	0.117	-18.64	39.00	0.180	-14.89	63.50	0.185	-14.66	88.00	0.022	-33.15
0.25	0.998	-0.02	15.00	0.094	-20.54	39.50	0.185	-14.66	64.00	0.189	-14.47	88.50	0.016	-35.92
0.50	1.000	0.00	15.50	0.083	-21.62	40.00	0.189	-14.47	64.50	0.192	-14.33	89.00	0.010	-40.00
0.75	1.000	0.00	16.00	0.086	-21.31	40.50	0.191	-14.38	65.00	0.194	-14.24	89.50	0.003	-50.46
1.00	1.000	0.00	16.50	0.101	-19.91	41.00	0.193	-14.29	65.50	0.197	-14.11	90.00	0.000	---
1.25	0.998	-0.02	17.00	0.120	-18.42	41.50	0.193	-14.29	66.00	0.198	-14.07			
1.50	0.996	-0.03	17.50	0.142	-16.95	42.00	0.192	-14.33	66.50	0.200	-13.98			
1.75	0.993	-0.06	18.00	0.163	-15.76	42.50	0.190	-14.42	67.00	0.201	-13.94			
2.00	0.989	-0.10	18.50	0.182	-14.80	43.00	0.188	-14.52	67.50	0.201	-13.94			
2.25	0.984	-0.14	19.00	0.200	-13.98	43.50	0.184	-14.70	68.00	0.201	-13.94			
2.50	0.978	-0.19	19.50	0.216	-13.31	44.00	0.179	-14.94	68.50	0.201	-13.94			
2.75	0.971	-0.26	20.00	0.230	-12.77	44.50	0.173	-15.24	69.00	0.200	-13.98			
3.00	0.964	-0.32	20.50	0.241	-12.36	45.00	0.166	-15.60	69.50	0.199	-14.02			
3.25	0.955	-0.40	21.00	0.250	-12.04	45.50	0.159	-15.97	70.00	0.198	-14.07			
3.50	0.946	-0.48	21.50	0.256	-11.84	46.00	0.151	-16.42	70.50	0.196	-14.15			
3.75	0.936	-0.57	22.00	0.260	-11.70	46.50	0.142	-16.95	71.00	0.194	-14.24			
4.00	0.925	-0.68	22.50	0.262	-11.63	47.00	0.132	-17.59	71.50	0.192	-14.33			
4.25	0.913	-0.79	23.00	0.261	-11.67	47.50	0.122	-18.27	72.00	0.189	-14.47			
4.50	0.901	-0.91	23.50	0.259	-11.73	48.00	0.112	-19.02	72.50	0.187	-14.56			
4.75	0.888	-1.03	24.00	0.254	-11.90	48.50	0.101	-19.91	73.00	0.184	-14.70			
5.00	0.874	-1.17	24.50	0.247	-12.15	49.00	0.090	-20.92	73.50	0.180	-14.89			
5.25	0.859	-1.32	25.00	0.239	-12.43	49.50	0.078	-22.16	74.00	0.177	-15.04			
5.50	0.844	-1.47	25.50	0.229	-12.80	50.00	0.067	-23.48	74.50	0.173	-15.24			
5.75	0.828	-1.64	26.00	0.217	-13.27	50.50	0.055	-25.19	75.00	0.169	-15.44			
6.00	0.811	-1.82	26.50	0.204	-13.81	51.00	0.043	-27.33	75.50	0.165	-15.65			
6.25	0.794	-2.00	27.00	0.189	-14.47	51.50	0.031	-30.17	76.00	0.160	-15.92			
6.50	0.776	-2.20	27.50	0.174	-15.19	52.00	0.019	-34.42	76.50	0.156	-16.14			
6.75	0.758	-2.41	28.00	0.157	-16.08	52.50	0.008	-41.94	77.00	0.151	-16.42			
7.00	0.739	-2.63	28.50	0.140	-17.08	53.00	0.009	-40.92	77.50	0.146	-16.71			

Azimuth Pattern

Type:	ATW-P-V	Polarization:	Vertical
Directivity:	2.00 numeric (3.01 dB)	Frequency:	8 (ATSC)
Peak(s) at:		Location:	Lima, OH
NOTE: Pattern shape and directivity may vary with channel and mounting configuration.			

Relative Field



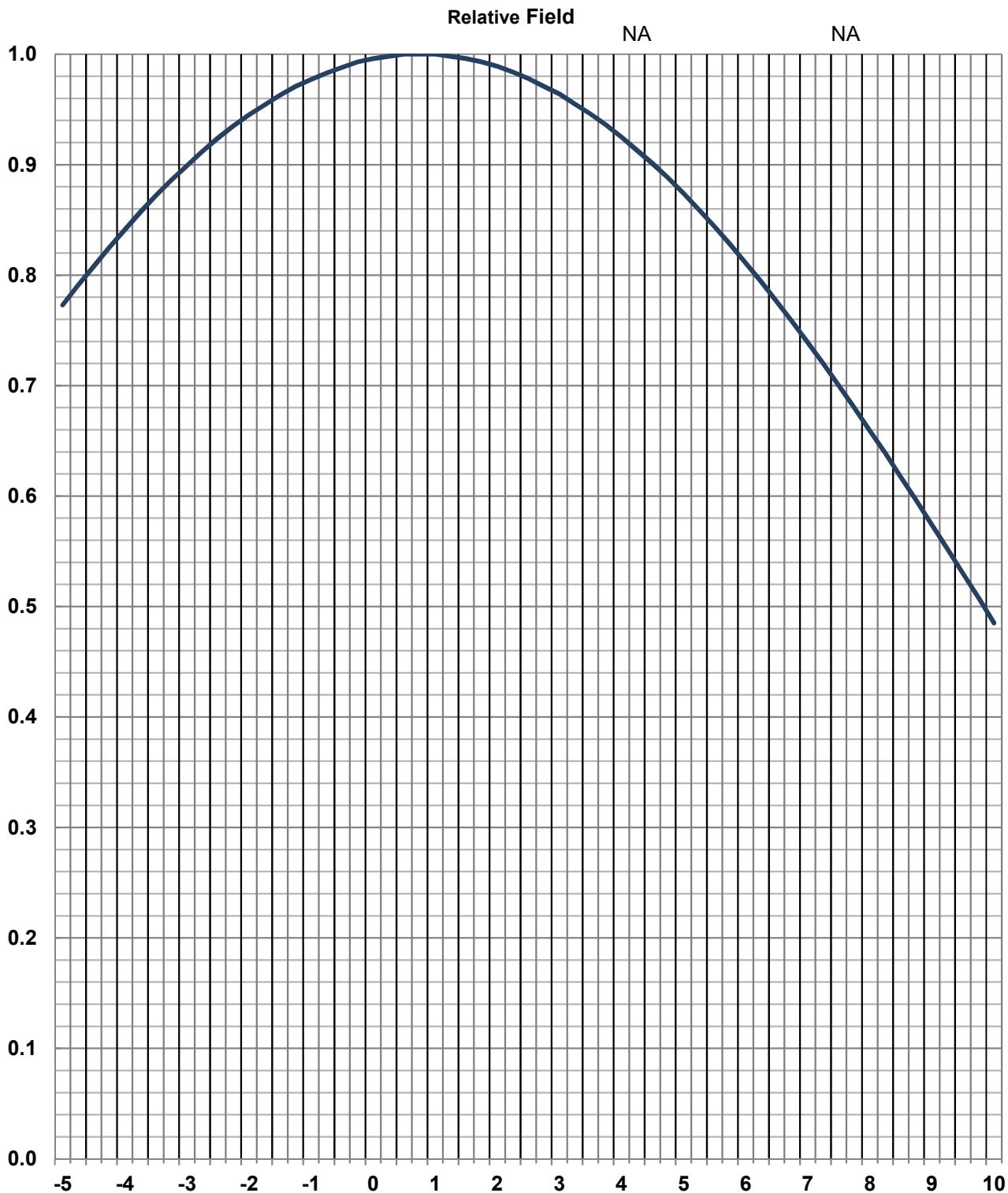
Tabulated Data for Azimuth Pattern

Type: ATW-P-V

Angle	Field	dB									
0	0.820	-1.72	100	0.435	-7.23	200	0.977	-0.20	300	0.383	-8.34
2	0.839	-1.52	102	0.427	-7.39	202	0.982	-0.16	302	0.386	-8.27
4	0.858	-1.33	104	0.419	-7.56	204	0.986	-0.12	304	0.388	-8.22
6	0.876	-1.15	106	0.412	-7.70	206	0.991	-0.08	306	0.391	-8.16
8	0.895	-0.96	108	0.404	-7.87	208	0.995	-0.04	308	0.393	-8.11
10	0.914	-0.78	110	0.396	-8.05	210	1.000	0.00	310	0.396	-8.05
12	0.927	-0.66	112	0.393	-8.11	212	0.995	-0.04	312	0.404	-7.87
14	0.939	-0.55	114	0.391	-8.16	214	0.991	-0.08	314	0.412	-7.70
16	0.952	-0.43	116	0.388	-8.22	216	0.986	-0.12	316	0.419	-7.56
18	0.964	-0.32	118	0.386	-8.27	218	0.982	-0.16	318	0.427	-7.39
20	0.977	-0.20	120	0.383	-8.34	220	0.977	-0.20	320	0.435	-7.23
22	0.982	-0.16	122	0.386	-8.27	222	0.964	-0.32	322	0.449	-6.96
24	0.986	-0.12	124	0.388	-8.22	224	0.952	-0.43	324	0.462	-6.71
26	0.991	-0.08	126	0.391	-8.16	226	0.939	-0.55	326	0.476	-6.45
28	0.995	-0.04	128	0.393	-8.11	228	0.927	-0.66	328	0.489	-6.21
30	1.000	0.00	130	0.396	-8.05	230	0.914	-0.78	330	0.503	-5.97
32	0.995	-0.04	132	0.404	-7.87	232	0.895	-0.96	332	0.522	-5.65
34	0.991	-0.08	134	0.412	-7.70	234	0.876	-1.15	334	0.541	-5.34
36	0.986	-0.12	136	0.419	-7.56	236	0.858	-1.33	336	0.561	-5.02
38	0.982	-0.16	138	0.427	-7.39	238	0.839	-1.52	338	0.580	-4.73
40	0.977	-0.20	140	0.435	-7.23	240	0.820	-1.72	340	0.599	-4.45
42	0.964	-0.32	142	0.449	-6.96	242	0.798	-1.96	342	0.621	-4.14
44	0.952	-0.43	144	0.462	-6.71	244	0.776	-2.20	344	0.643	-3.84
46	0.939	-0.55	146	0.476	-6.45	246	0.754	-2.45	346	0.666	-3.53
48	0.927	-0.66	148	0.489	-6.21	248	0.732	-2.71	348	0.688	-3.25
50	0.914	-0.78	150	0.503	-5.97	250	0.710	-2.97	350	0.710	-2.97
52	0.895	-0.96	152	0.522	-5.65	252	0.688	-3.25	352	0.732	-2.71
54	0.876	-1.15	154	0.541	-5.34	254	0.666	-3.53	354	0.754	-2.45
56	0.858	-1.33	156	0.561	-5.02	256	0.643	-3.84	356	0.776	-2.20
58	0.839	-1.52	158	0.580	-4.73	258	0.621	-4.14	358	0.798	-1.96
60	0.820	-1.72	160	0.599	-4.45	260	0.599	-4.45	360	0.820	-1.72
62	0.798	-1.96	162	0.621	-4.14	262	0.580	-4.73			
64	0.776	-2.20	164	0.643	-3.84	264	0.561	-5.02			
66	0.754	-2.45	166	0.666	-3.53	266	0.541	-5.34			
68	0.732	-2.71	168	0.688	-3.25	268	0.522	-5.65			
70	0.710	-2.97	170	0.710	-2.97	270	0.503	-5.97			
72	0.688	-3.25	172	0.732	-2.71	272	0.489	-6.21			
74	0.666	-3.53	174	0.754	-2.45	274	0.476	-6.45			
76	0.643	-3.84	176	0.776	-2.20	276	0.462	-6.71			
78	0.621	-4.14	178	0.798	-1.96	278	0.449	-6.96			
80	0.599	-4.45	180	0.820	-1.72	280	0.435	-7.23			
82	0.580	-4.73	182	0.839	-1.52	282	0.427	-7.39			
84	0.561	-5.02	184	0.858	-1.33	284	0.419	-7.56			
86	0.541	-5.34	186	0.876	-1.15	286	0.412	-7.70			
88	0.522	-5.65	188	0.895	-0.96	288	0.404	-7.87			
90	0.503	-5.97	190	0.914	-0.78	290	0.396	-8.05			
92	0.489	-6.21	192	0.927	-0.66	292	0.393	-8.11			
94	0.476	-6.45	194	0.939	-0.55	294	0.391	-8.16			
96	0.462	-6.71	196	0.952	-0.43	296	0.388	-8.22			
98	0.449	-6.96	198	0.964	-0.32	298	0.386	-8.27			

Elevation Pattern

Type:	ATW4V3V	Polarization:	Vertical
Directivity:		Frequency:	8 (ATSC)
Main Lobe:	4.00 numeric (6.02 dB)	Location:	Lima, OH
Horizontal:	3.97 numeric (5.99 dB)	Beam Tilt:	0.75 degrees



Tabulated Data for Elevation Pattern

Type:

ATW4V3V

-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	0.773	-2.24	7.25	0.720	-2.85	29.00	0.123	-18.20	53.50	0.019	-34.42	78.00	0.141	-17.02
-4.75	0.791	-2.04	7.50	0.700	-3.10	29.50	0.105	-19.58	54.00	0.031	-30.17	78.50	0.136	-17.33
-4.50	0.808	-1.85	7.75	0.680	-3.35	30.00	0.087	-21.21	54.50	0.042	-27.54	79.00	0.130	-17.72
-4.25	0.825	-1.67	8.00	0.659	-3.62	30.50	0.069	-23.22	55.00	0.053	-25.51	79.50	0.125	-18.06
-4.00	0.841	-1.50	8.25	0.639	-3.89	31.00	0.052	-25.68	55.50	0.064	-23.88	80.00	0.120	-18.42
-3.75	0.857	-1.34	8.50	0.617	-4.19	31.50	0.037	-28.64	56.00	0.075	-22.50	80.50	0.114	-18.86
-3.50	0.872	-1.19	8.75	0.596	-4.50	32.00	0.028	-31.06	56.50	0.085	-21.41	81.00	0.108	-19.33
-3.25	0.886	-1.05	9.00	0.574	-4.82	32.50	0.030	-30.46	57.00	0.095	-20.45	81.50	0.102	-19.83
-3.00	0.899	-0.92	9.25	0.552	-5.16	33.00	0.041	-27.74	57.50	0.105	-19.58	82.00	0.097	-20.26
-2.75	0.912	-0.80	9.50	0.530	-5.51	33.50	0.055	-25.19	58.00	0.114	-18.86	82.50	0.091	-20.82
-2.50	0.924	-0.69	9.75	0.508	-5.88	34.00	0.070	-23.10	58.50	0.123	-18.20	83.00	0.085	-21.41
-2.25	0.935	-0.58	10.00	0.485	-6.29	34.50	0.085	-21.41	59.00	0.131	-17.65	83.50	0.079	-22.05
-2.00	0.945	-0.49	10.50	0.440	-7.13	35.00	0.099	-20.09	59.50	0.139	-17.14	84.00	0.072	-22.85
-1.75	0.954	-0.41	11.00	0.395	-8.07	35.50	0.113	-18.94	60.00	0.146	-16.71	84.50	0.066	-23.61
-1.50	0.963	-0.33	11.50	0.351	-9.09	36.00	0.126	-17.99	60.50	0.153	-16.31	85.00	0.060	-24.44
-1.25	0.971	-0.26	12.00	0.307	-10.26	36.50	0.138	-17.20	61.00	0.160	-15.92	85.50	0.054	-25.35
-1.00	0.977	-0.20	12.50	0.264	-11.57	37.00	0.148	-16.59	61.50	0.166	-15.60	86.00	0.048	-26.38
-0.75	0.983	-0.15	13.00	0.223	-13.03	37.50	0.158	-16.03	62.00	0.171	-15.34	86.50	0.041	-27.74
-0.50	0.988	-0.10	13.50	0.184	-14.70	38.00	0.167	-15.55	62.50	0.176	-15.09	87.00	0.035	-29.12
-0.25	0.993	-0.06	14.00	0.148	-16.59	38.50	0.174	-15.19	63.00	0.181	-14.85	87.50	0.029	-30.75
0.00	0.996	-0.03	14.50	0.117	-18.64	39.00	0.180	-14.89	63.50	0.185	-14.66	88.00	0.022	-33.15
0.25	0.998	-0.02	15.00	0.094	-20.54	39.50	0.185	-14.66	64.00	0.189	-14.47	88.50	0.016	-35.92
0.50	1.000	0.00	15.50	0.083	-21.62	40.00	0.189	-14.47	64.50	0.192	-14.33	89.00	0.010	-40.00
0.75	1.000	0.00	16.00	0.086	-21.31	40.50	0.191	-14.38	65.00	0.194	-14.24	89.50	0.003	-50.46
1.00	1.000	0.00	16.50	0.101	-19.91	41.00	0.193	-14.29	65.50	0.197	-14.11	90.00	0.000	---
1.25	0.998	-0.02	17.00	0.120	-18.42	41.50	0.193	-14.29	66.00	0.198	-14.07			
1.50	0.996	-0.03	17.50	0.142	-16.95	42.00	0.192	-14.33	66.50	0.200	-13.98			
1.75	0.993	-0.06	18.00	0.163	-15.76	42.50	0.190	-14.42	67.00	0.201	-13.94			
2.00	0.989	-0.10	18.50	0.182	-14.80	43.00	0.188	-14.52	67.50	0.201	-13.94			
2.25	0.984	-0.14	19.00	0.200	-13.98	43.50	0.184	-14.70	68.00	0.201	-13.94			
2.50	0.978	-0.19	19.50	0.216	-13.31	44.00	0.179	-14.94	68.50	0.201	-13.94			
2.75	0.971	-0.26	20.00	0.230	-12.77	44.50	0.173	-15.24	69.00	0.200	-13.98			
3.00	0.964	-0.32	20.50	0.241	-12.36	45.00	0.166	-15.60	69.50	0.199	-14.02			
3.25	0.955	-0.40	21.00	0.250	-12.04	45.50	0.159	-15.97	70.00	0.198	-14.07			
3.50	0.946	-0.48	21.50	0.256	-11.84	46.00	0.151	-16.42	70.50	0.196	-14.15			
3.75	0.936	-0.57	22.00	0.260	-11.70	46.50	0.142	-16.95	71.00	0.194	-14.24			
4.00	0.925	-0.68	22.50	0.262	-11.63	47.00	0.132	-17.59	71.50	0.192	-14.33			
4.25	0.913	-0.79	23.00	0.261	-11.67	47.50	0.122	-18.27	72.00	0.189	-14.47			
4.50	0.901	-0.91	23.50	0.259	-11.73	48.00	0.112	-19.02	72.50	0.187	-14.56			
4.75	0.888	-1.03	24.00	0.254	-11.90	48.50	0.101	-19.91	73.00	0.184	-14.70			
5.00	0.874	-1.17	24.50	0.247	-12.15	49.00	0.090	-20.92	73.50	0.180	-14.89			
5.25	0.859	-1.32	25.00	0.239	-12.43	49.50	0.078	-22.16	74.00	0.177	-15.04			
5.50	0.844	-1.47	25.50	0.229	-12.80	50.00	0.067	-23.48	74.50	0.173	-15.24			
5.75	0.828	-1.64	26.00	0.217	-13.27	50.50	0.055	-25.19	75.00	0.169	-15.44			
6.00	0.811	-1.82	26.50	0.204	-13.81	51.00	0.043	-27.33	75.50	0.165	-15.65			
6.25	0.794	-2.00	27.00	0.189	-14.47	51.50	0.031	-30.17	76.00	0.160	-15.92			
6.50	0.776	-2.20	27.50	0.174	-15.19	52.00	0.019	-34.42	76.50	0.156	-16.14			
6.75	0.758	-2.41	28.00	0.157	-16.08	52.50	0.008	-41.94	77.00	0.151	-16.42			
7.00	0.739	-2.63	28.50	0.140	-17.08	53.00	0.009	-40.92	77.50	0.146	-16.71			

EXHIBIT E-3

ALLOCATION STUDY

tvstudy v2.2.3 (Dxtpx3)
Database: localhost, Study: WLIO-SITEH-ATW-VHFP3, Model: Longley-Rice
Start: 2017.11.24 16:24:51

Study created: 2017.11.24 16:19:01

Study build station data: LMS TV 2017-11-21 (32)

Proposal: WLIO D8 DT LIC LIMA, OH
File number: SITEH-ATW-VHFP
Facility ID: 37503
Station data: User record
Record ID: 132
Country: U.S.
Zone: I

Search options:

Non-U.S. records included

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WBNA	D8	DT	LIC	LOUISVILLE, KY	BLCDT20021024AAB	335.6 km
WWMT	D8	DT	LIC	KALAMAZOO, MI	BLCDT20090616AAV	237.4
WJW	D8	DT	LIC	CLEVELAND, OH	BLCDT20090612AJC	211.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D8
Latitude: 40 46 34.90 N (NAD83)
Longitude: 84 7 15.90 W
Height AMSL: 426.3 m
HAAT: 0.0 m
Peak ERP: 50.0 kW
Antenna: ERI-ATW-VHFP 0.0 deg
Elev Pattrn: Generic
Elec Tilt: 1.0

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	33.6 kW	188.4 m	94.1 km
45.0	44.7	174.1	94.9
90.0	12.7	153.1	84.3
135.0	8.63	147.2	80.9
180.0	33.6	156.6	91.3
225.0	44.7	168.1	94.3
270.0	12.7	182.1	86.7
315.0	8.63	189.5	84.6

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 170 m

ERP exceeds maximum
ERP: 50.0 kW ERP maximum: 30.0 kW

**Proposal service area extends beyond baseline plus 1.0%
Proposal service area population is more than 95.0% of baseline

**Proposal is within coordination distance of Canadian border
Distance to Canadian border: 149.4 km

Distance to Mexican border: 1980.3 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 323.8 degrees Distance: 254.0 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 274.7 degrees Distance: 1781.7 km

Study cell size: 2.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to BLCDT20021024AAB LIC, scenario 1

Desired:	Call WBNA	Chan D8	Svc DT	Status LIC	City, State LOUISVILLE, KY	File Number BLCDT20021024AAB	Distance
Undesireds:	WLIO	D8	DT	BL	LIMA, OH	DTVBL37503	332.4 km
	WLIO	D8	DT	LIC	LIMA, OH	SITEH-ATW-VHFP	335.6
	WSIU-TV	D8	DT	LIC	CARBONDALE, IL	BLEDT20090612ADB	305.5
	WIIH-CD	D8	DC	LIC	INDIANAPOLIS, IN	BLDVL20090902ACB	210.1
	WDEF-TV	D8	DT	CP	CHATTANOOGA, TN	BLANK0000026651	324.4
	WNIN	D9	DT	LIC	EVANSVILLE, IN	BLEDT20090612AGN	132.8
Service area	24877.7	1,699,683	22844.9	Terrain-limited 1,666,248	IX-free, before 22378.7	IX-free, after 22338.5	Percent New IX 0.18 0.05
Undesired	WLIO D8 DT BL	48.2	Total IX 704	Unique IX, before 40.1	606	Unique IX, after	
	WLIO D8 DT LIC	92.3	2,152			80.3	1,511
	WSIU-TV D8 DT LIC	326.7	4,726	243.3	3,488	239.3	2,945

WIIH-CD	D8	DC	LIC	4.0	39	0.0	0	0.0	0
WDEF-TV	D8	DT	CP	71.8	2,408	59.9	2,325	59.9	2,325
WNIN	D9	DT	LIC	98.9	1,801	39.6	783	39.6	783

Interference to BLCDT20090616AAV LIC, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance	
	WWMT	D8	DT	LIC	KALAMAZOO, MI	BLCDT20090616AAV		
Undesireds:	WLIO	D8	DT	BL	LIMA, OH	DTVBL37503	239.8 km	
	WLIO	D8	DT	LIC	LIMA, OH	SITEH-ATW-VHFP	237.4	
	WJW	D8	DT	LIC	CLEVELAND, OH	BLCDT20090612AJC	345.7	
	WMVS	D8	DT	LIC	MILWAUKEE, WI	BLEDT20120802AAO	199.6	
	WWTV	D9	DT	LIC	CADILLAC, MI	BLCDT20091217ACZ	168.0	
Service area					Terrain-limited	IX-free, before	IX-free, after	Percent New IX
29880.4	2,460,942	29660.4	2,455,432	27962.9	2,402,945	28180.0	2,408,962	-0.78 -0.25
Undesired				Total IX	Unique IX, before	Unique IX, after		
WLIO D8 DT BL		694.1		32,518	609.9	30,750		
WLIO D8 DT LIC		452.9		26,073		392.8	24,733	
WJW D8 DT LIC		4.0		131	0.0	0	0.0	0
WMVS D8 DT LIC		1067.8		21,402	983.6	19,508	1007.7	19,936
WWTV D9 DT LIC		19.8		461	15.8	204	15.8	204

Interference to BLCDT20090616AAV LIC, scenario 2

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance	
	WWMT	D8	DT	LIC	KALAMAZOO, MI	BLCDT20090616AAV		
Undesireds:	WLIO	D8	DT	BL	LIMA, OH	DTVBL37503	239.8 km	
	WLIO	D8	DT	LIC	LIMA, OH	SITEH-ATW-VHFP	237.4	
	WJW	D8	DT	LIC	CLEVELAND, OH	BLCDT20090612AJC	345.7	
	WMVS	D8	DT	APP	MILWAUKEE, WI	BMPEDT20100730ABN	199.6	
	WWTV	D9	DT	LIC	CADILLAC, MI	BLCDT20091217ACZ	168.0	
Service area					Terrain-limited	IX-free, before	IX-free, after	Percent New IX
29880.4	2,460,942	29660.4	2,455,432	27507.0	2,393,909	27708.1	2,399,475	-0.73 -0.23
Undesired				Total IX	Unique IX, before	Unique IX, after		
WLIO D8 DT BL		694.1		32,518	561.8	29,716		
WLIO D8 DT LIC		452.9		26,073		360.7	24,150	
WJW D8 DT LIC		4.0		131	0.0	0	0.0	0
WMVS D8 DT APP		1571.8		31,472	1439.5	28,544	1479.6	29,423
WWTV D9 DT LIC		19.8		461	15.8	204	15.8	204

Interference to BLCDT20090612AJC LIC, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance	
	WJW	D8	DT	LIC	CLEVELAND, OH	BLCDT20090612AJC		
Undesireds:	WLIO	D8	DT	BL	LIMA, OH	DTVBL37503	213.7 km	
	WLIO	D8	DT	LIC	LIMA, OH	SITEH-ATW-VHFP	211.8	
	WWCP-TV	D8	DT	LIC	JOHNSTOWN, PA	BLANK0000001637	252.7	
	WSWP-TV	D8	DT	CP	GRANDVIEW, WV	BLANK0000026238	390.4	
	WTOV-TV	D9	DT	LIC	STEUBENVILLE, OH	BLCDT20111206ACB	146.1	
	CFTO-DT	D8	DT	LIC	TORONTO, ON	BLANKCANADA232	317.1	
Service area								
					Terrain-limited	IX-free, before	IX-free, after	Percent New IX
25033.1	3,977,148	24247.4	3,905,325	23606.9	3,858,120	23570.0	3,845,835	0.16 0.32
3827.1	171	3827.1	171	3827.1	171	3827.1	171	0.00 0.00 (in
Canada)								
Undesired				Total IX	Unique IX, before	Unique IX, after		
WLIO D8 DT BL		428.0		23,437	359.8	15,445		
WLIO D8 DT LIC		453.1		30,365		396.8	27,730	
WWCP-TV D8 DT LIC		240.5		20,515	172.3	13,111	184.1 18,505	
WTOV-TV D9 DT LIC		4.0		344	4.0	344	4.0 344	
CFTO-DT D8 DT LIC		64.3		11,963	24.1	10,108	20.1 9,872	

Interference to proposal, scenario 1

7.51% interference

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WLIO	D8	DT	LIC	LIMA, OH	SITEH-ATW-VHFP	
Undesireds:	WBNA	D8	DT	LIC	LOUISVILLE, KY	BLCDT20021024AAB	335.6 km
	WWMT	D8	DT	LIC	KALAMAZOO, MI	BLCDT20090616AAV	237.4
	WJW	D8	DT	LIC	CLEVELAND, OH	BLCDT20090612AJC	211.8
	WGCT-CD	D8	DC	LIC	COLUMBUS, OH	BLDVA20131021AAM	127.6
Service area				Terrain-limited	IX-free	Percent IX	
24905.8	1,058,279	24415.0	1,037,129	22881.8	959,276	6.28 7.51	
Undesired				Total IX	Unique IX	Prcnt Unique IX	
WBNA D8 DT LIC		8.1		152	4.0	0.02 0.00	
WWMT D8 DT LIC		402.1		29,188	253.1	1.04 2.04	
WJW D8 DT LIC		1183.5		53,817	833.8	3.42 4.01	
WGCT-CD D8 DC LIC		309.3		7,231	88.6	0.36 0.27	

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
WLIO-DT, LIMA, OHIO
CHANNEL 8 50 KW ERP 170 METERS HAAT
NOVEMBER 2017

<u>Radial</u>	Average Elevation	Effective Height	Depression Angle	Effective Radiated Power	Distance to Contour <u>36 dBu</u>
N ° E, T	meters	meters	degrees	kW	km
0	237.9	188.4	0.4	33.6	94.1
10	241.1	185.2	0.4	41.8	95.4
20	244.3	182.0	0.4	47.7	96.1
30	247.4	178.9	0.4	50.0	96.1
40	250.6	175.7	0.4	47.7	95.5
50	254.5	171.8	0.4	41.8	94.1
60	259.2	167.1	0.4	33.6	92.2
70	263.9	162.4	0.4	25.2	89.8
80	268.5	157.8	0.3	17.9	87.1
90	273.2	153.1	0.3	12.7	84.3
100	274.5	151.8	0.3	9.5	82.1
110	275.8	150.5	0.3	7.8	80.6
120	277.1	149.2	0.3	7.3	79.9
130	278.4	147.9	0.3	7.8	80.3
140	278.0	148.3	0.3	9.5	81.7
150	275.9	150.4	0.3	12.7	84.0
160	273.9	152.4	0.3	17.9	86.6
170	271.8	154.5	0.3	25.2	89.1
180	269.7	156.6	0.3	33.6	91.3
190	267.2	159.1	0.3	41.8	93.0
200	264.6	161.7	0.4	47.7	94.2
210	262.0	164.3	0.4	50.0	94.7
220	259.5	166.8	0.4	47.7	94.6
230	256.6	169.7	0.4	41.8	94.0
240	253.5	172.8	0.4	33.6	92.7
250	250.4	175.9	0.4	25.2	91.0
260	247.3	179.0	0.4	17.9	88.9
270	244.2	182.1	0.4	12.7	86.7

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
WLIO-DT, LIMA, OHIO
CHANNEL 8 50 KW ERP 170 METERS HAAT
NOVEMBER 2017

<u>Radial</u> N ° E, T	Average Elevation	Effective Height	Depression Angle	Effective Radiated Power	<u>Distance to Contour</u> <u>36 dBu</u>
	meters	meters	degrees	kW	km
280	242.6	183.7	0.4	9.5	84.8
290	240.9	185.4	0.4	7.8	83.6
300	239.3	187.0	0.4	7.3	83.2
310	237.6	188.7	0.4	7.8	83.9
320	236.9	189.4	0.4	9.5	85.2
330	237.2	189.1	0.4	12.7	87.3
340	237.4	188.9	0.4	17.9	89.7
350	237.7	188.6	0.4	25.2	92.1

