

ENGINEERING STATEMENT
RE REQUEST FOR LICENSE TO COVER THE
OUTSTANDING CONSTRUCTION PERMIT
(FCC FILE NO. BMPCDT-20060517ABE)
ON BEHALF OF
WLIO-DT, LIMA, OHIO
CHANNEL 8 27.5 KW MAX DA ERP 148 METERS HAAT
MARCH 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)

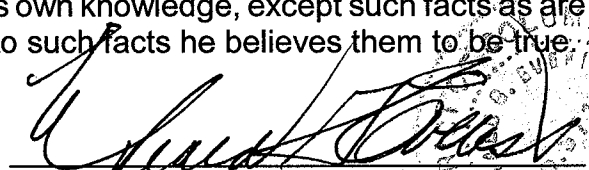
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

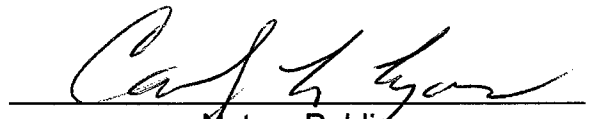
That the attached engineering report was prepared by him or under his supervision and direction and

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.



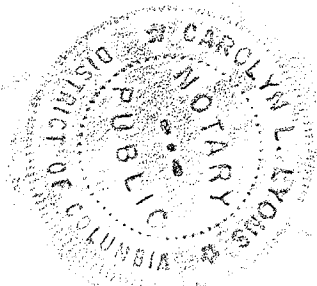
Donald G. Everist
District of Columbia
Professional Engineer
Registration No. 5714

Subscribed and sworn to before me this 1st day of March, 2007.



Notary Public

My Commission Expires: 2/28/2008



Introduction

This engineering statement has been prepared on behalf of Lima Communications Corporation, licensee of WLIO(TV). The purpose of this engineering statement is to accompany its request for license of the outstanding construction permit (FCC File No. BMPCDT-20060517ABE). Included with this report are the exhibits required with FCC Form 302.

Lima Communications Corporation operates television station WLIO(TV) on NTSC Channel 35 with a maximum visual effective radiated power ("ERP") of 661 kW (horizontal polarization) and an antenna height above average terrain ("HAAT") of 165 meters (541 feet). Lima Communications Corporation has been allocated DTV Channel 20 with facilities of 50 kW ERP at an HAAT of 165 meters in the revised DTV Table of Allotments¹, but was granted in a rulemaking to replace its DTV Channel 20 with DTV Channel 8 (FCC File No. BPRM-20000728AAG). Lima Communications Corporation has been granted authorization to construct DTV facilities in its outstanding construction permit (FCC File No. BMPCDT-20060517ABE). A slight revision is required in order to permit clearance to an upper level guy wire. Therefore, the antenna was lowered 27 inches. Therefore, this slight reduction in height of the proposed antenna radiation center is made under the provisions of Section 73.1690.

Also, the number of bays has been reduced from a 10-bay to an 8-bay. The reason is that this antenna was redesigned to permit a more mechanically suitable antenna. This redesign resulted in a weight/windload increase in the anticipated 10-bay antenna which could not be totally accommodated by modifying or upgrading the tower structural capacity. So that the tower capability once upgraded would not be exceeded, a lower weight/windload 8-bay antenna was selected.

¹"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), 2/12/98, DTV Table of Allotments (Pg. B-43).

The manufacturer indicates that this mechanical change to the antenna did not change the horizontal radiation pattern as authorized by the outstanding construction permit.²

Channel 8 does not impact any adjacent or co-channel land-mobile operations as defined by Section 74.709 of the FCC Rules.

Therefore, the change in antenna model number is in accordance with Section 73.1690 of the FCC Rules. A complete description of the antenna data as received from the manufacturer is included in Exhibit E-1, per Section 73.685(f) of the FCC Rules.

A new RFF statement is supplied to demonstrate there is no change in the radiofrequency field level Lima Communications Corporation now proposes to license its currently authorized DTV facilities in its outstanding construction permit to 27.5 kW ERP (horizontal polarization) on Channel 8 at an HAAT of 148 meters.

WLIO-DT Tower

The DTV antenna is side-mounted on an existing tower having a total overall structure height above ground of 167.3 meters. The existing transmitter site is located at 1424 Rice Avenue, Lima, Ohio. The tower has been registered under the number 1014519.

The geographic coordinates of the existing tower are as follows:

North Latitude: 40° 44' 51"

West Longitude: 84° 07' 54.5"

NAD-27

Equipment Data

An ERI, Type ETH-CH8-8 antenna, with 1.0° electrical beam tilt is installed. The vertical plane pattern and other exhibits required by Section 73.625(c) are included in Exhibit E-1.

²Field pattern of 8-bay antenna within 0.1 dB of the 10-bay antenna authorized in the outstanding construction permit.

Power Data

Transmitter Power Output	4.23 kW	6.257 dBk
Filter Loss	94.4%	0.25 dB
Power After Filter	3.99 kW	6.007 dB
Transmission Line Loss (453 ft. of ERI HJ8-50 3" Air Heliastax)	81.34%	0.897
Input Power to Antenna	3.25 kW	5.11 dBk
Antenna Power Gain	8.47	9.28 dB
Effective Radiated Power	27.5 kW	14.39 dBk

Elevation Data

(Existing Tower; No Change in Overall Height)

Elevation of site above mean sea level	265.2 meters (870 feet)
Overall height above ground of the existing antenna structure (including beacon)	167.3 meters (549 feet)
Overall height above mean sea level of existing tower (including beacon)	432.5 meters (1419 feet)
Center of radiation of Channel 8 antenna above ground	138.2 meters (453.25 feet)
Center of radiation of Channel 8 antenna above mean sea level	403.4 meters (1323.25 feet)
Antenna height above average terrain	148 meters

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

Radio Frequency Field Level

The DTV antenna will be side-mounted on the existing tower with 138.2 meters radiation center above ground level. WLIO(TV) is the only broadcast station which currently operates at the site. The following non-broadcast facilities are also licensed to transmit from the tower:

KPH703

WPLP548

Pursuant to OET Bulletin No. 65, dated August 1997, these non-broadcast stations are all exempt from radio frequency field ("RFF") level evaluations for the following reason:

<u>Station</u>	<u>Licensed Under Part No.</u>	<u>Reason for Exemption</u>
KPH703	Part 74, Subpart D	Subpart D Exempt
WPLP548	Part 74, Subpart D	Subpart D Exempt

Therefore, the RFF study will consider the following stations:

WLIO(TV) Channel 35

WLIO-DT Channel 8

The RFF radiation contribution of each 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

ERP = $[0.4\text{ERP}_v + \text{ERP}_a]$ for NTSC Stations

ERP_v = peak visual ERP in watts

ERP_a = RMS aural ERP in watts

WLIO(TV) NTSC Facility

Channel 35 Freq: 596-602 MHz Range
 ERP = (0.4)[661,000 watts (visual)] + [66,100 watts (aural)]
 Polarization = Horizontal
 RCAGL -2 meters = 156.8 meters

WLIO(TV) is using an RCA TFCU-30JA antenna with 0.5° electrical beam tilt. The manufacturer's vertical plane pattern indicates that the relative field factor will be less than 0.2 at any angle greater than 5 degrees below the horizon. A value of 0.2 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2} \quad \begin{array}{ll} \text{Tot ERP} = & 330,500 \text{ watts (Horizontal Only)} \\ R & = 156.8 \text{ meters} \\ F & = 0.2 \text{ (field factor)} \end{array}$$

$$S = 18.0 \text{ uW/cm}^2 \quad S = 0.018 \text{ mW/cm}^2$$

WLIO(TV) contributes less than 0.018 mW/cm² at 2 meters above the ground. The limit for an uncontrolled environment is f/1500 for a station broadcasting on 599 MHz.

$$(599 \text{ MHz})/1500 = 0.399 \text{ mW/cm}^2 \text{ is the RFF limit for WLIO(TV)}$$

Therefore:

WLIO(TV) NTSC facility contributes less than 4.5% RFF for an uncontrolled environment two meters above the ground at the tower site.

WLIO-DT DTV Facility

Channel 8 Freq: 180-186 MHz Range
 ERP = 27,500 watts
 Polarization = Horizontal
 RCAGL - 2 meters = 136.2 meters

WLIO-DT proposes to utilize an ERI, ETH-CH-8 antenna with 1.0° electrical beam tilt. The field factor will be less than 0.25 at any angle greater than 6 degrees below the horizon. A value of 0.25 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2} \quad \begin{array}{ll} \text{Tot ERP} = & 27,500 \text{ watts--Average (Horizontal Only)} \\ R & = 136.2 \text{ meters} \\ F & = 0.25 \text{ (field factor)} \end{array}$$

$$S = 3.1 \text{ uW/cm}^2 \quad S = 0.0031 \text{ mW/cm}^2$$

Therefore WLIO-DT contributes less than 0.0031 mW/cm² at 2 meters above the ground. The limit for an uncontrolled environment is 200 µW/cm² for a station broadcasting in the 180-186 MHz range.

Therefore:

WLIO-DT's proposed DTV facility will contribute less than 1.5% RFF for an uncontrolled environment two meters above the ground at the tower site.

Total RFF at the Site

The total RFF contribution of all transmitters can now be calculated:

Total RFF = WLIO(TV) RFF% + WLIO-DT RFF%

Total RFF = 4.5% + 1.5%

Total RFF = 6.0%

Therefore, all facilities contribute less than 6.0% RFF for an uncontrolled environment, which is less than approximately 1.2% RFF for a controlled environment, 2 meters above the ground at the tower site.

The tower site is located inside a chain link fence with a locked gate to prevent unauthorized access to the tower.

Finally, provisions are made to reduce power or to terminate the transmitter emissions as appropriate when it is necessary for authorized personnel to climb the tower. All facilities operating on the tower will coordinate to ensure that workers will not be subjected to RFF levels in excess of the current FCC guidelines listed in OET Bulletin No. 65, dated August 1997 and Supplement A.

Special Operation Condition

Lima Communications Corporation acknowledges that the grant of this DTV license is subject to the special operating condition specified in the outstanding construction permit. Therefore, Lima Communications Corporation certifies that it has made a good faith effort to identify and notify potentially affected health care facilities within the WLIO-DT service area authorized by the outstanding construction permit (FCC File No. BMPCDT-20060517ABE).

Cohen, Dippell and Everist, P.C.

EXHIBIT E-1
ANTENNA MANUFACTURER DATA
FOR THE OUTSTANDING CONSTRUCTION PERMIT
(FCC FILE NO. BMPCDT-20060517ABE)
WLIO-DT, LIMA, OHIO

ERI TECHNICAL MANUAL
ETH-CH8-8 540 TYPE
SIDE MOUNTED VHF ANTENNA
CH. 8, WLIO-DT, LIMA, OHIO
#17055

FINAL MANUAL: 4 December 2006

Technical Manual #

Date

CH8 ETH-CH8-8

4 December 2006



Electronics Research

7777 Gardner Road
Chandler, Indiana U.S.A. 47610

TABLE 1-1A**Electrical Specifications - DTV**

<u>Parameter</u>	<u>Value</u>
Channel	8
Frequency Range	180-186 MHZ
Azimuth Pattern No.	CH8AZH
Elevation Pattern No.	CH8ELH
Azimuthal Directivity	1.10 (0.41 dB)
Elevation Directivity	7.70 (8.86 dBd)
Gain at Horizontal	8.08 (9.08 dBd)
Peak Power Gain	8.47 (9.28 dBd)
Electrical Beam Tilt	1.00 degrees
Max. Input Power Rating	16 kW Average Power Digital
Input Type	3-1/8" EIA 50 OHM
MAX VSWR	1.10 Over 6 MHz Channel

NOTE: Measured VSWR provided.



TABLE 1-2
Mechanical Specifications *

<u>Parameter</u>	<u>Value</u>
Antenna Height	33.00 Ft.
Radiation Center above Tower Top	16.50 Ft.
Antenna Input Type	3-1/8" EIA 50 OHM
Pressurized Radome	Not to exceed 5 PSIG
Weight:	960 lbs.
Ant. Area $C_a A_C$ (Rev.F No Ice):	46.0 Sq. Ft.

REV. F: Based on a wind speed of 70 MPH with a height above average terrain (HAAT) of 485 ft. & HAGL of 455 ft. per EIA/TIA-222-F.

NOTE: The antenna is designed to be mounted and must be supported by a structure that can resist the antenna base reactions and provide a support that is rigid in the three translational and three rotational degrees of freedom.

NOTE: See Installation Drawings provided in the back of this manual for further details.



INFORMATION

1.1.0 INTRODUCTION

- 1.1.1 This section provides patterns, VSWR, and drawings necessary for the proper installation and maintenance of the TRASAR® antenna.
- 1.1.2 This section provides information for ordering replacement parts or assemblies for the TRASAR® antenna. Please contact ERI Technical Service at 812-925-6000 for further information.

Measured VSWR

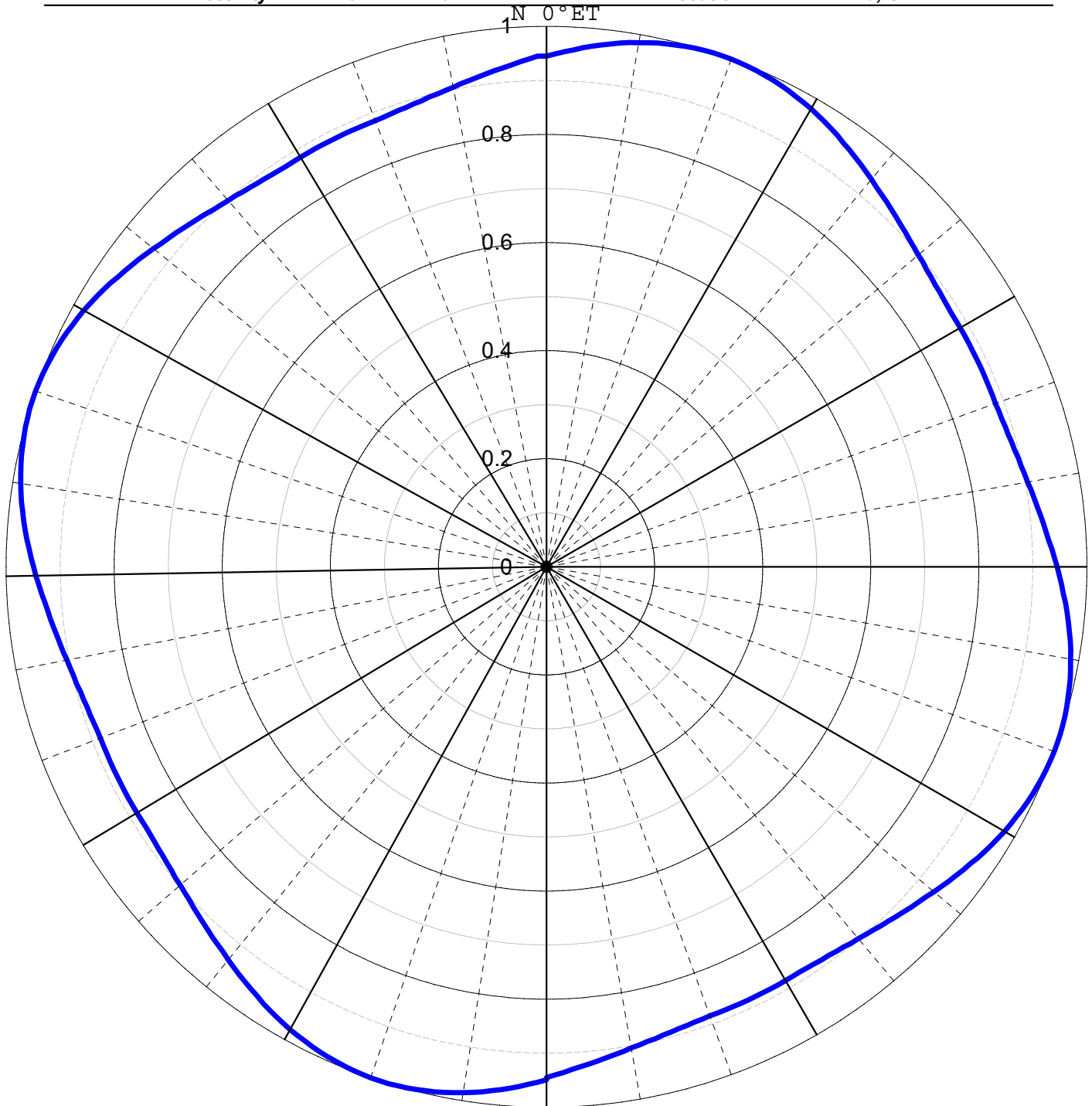
CH8AZH	Horizontal Azimuth Pattern & Tab Data
CH8ELH	Horizontal Elevation Pattern & Tab Data
TA17055-100	Antenna Assembly
TA17055-102	Mechanical Parameters



MEASURED VSWR**CH. 8, WLIO-DT, LIMA, OHIO****ETH-CH8-8 Side Mounted VHF Antenna****Final Slotted Line Measurements****CH8 – DTV**

<u>Frequency (MHZ)</u>	<u>VSWR</u>
180.00	1.06
182.00	1.04
184.00	1.09
186.00	1.06



AZIMUTH PATTERNTYPE: CRUCIS-OPolarization: HorizontalNumeric 1.10 dB 0.41Channel: 8 (DTV)Directivity: 1.10 0.41Location: Lima, OH

Note: Pattern shape and directivity may vary with channel and mounting configuration.



Electronics Research, Inc.
7777 Gardner Rd.
Chandler, IN 47610

TABULATED DATA FOR AZIMUTH PATTERN**TYPE: CRUCIS-O**

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.95	-0.49	90	0.95	-0.49	180	0.95	-0.49	270	0.95	-0.49
2	0.95	-0.41	92	0.95	-0.41	182	0.95	-0.41	272	0.95	-0.41
4	0.96	-0.33	94	0.96	-0.33	184	0.96	-0.33	274	0.96	-0.33
6	0.97	-0.26	96	0.97	-0.26	186	0.97	-0.26	276	0.97	-0.26
8	0.98	-0.18	98	0.98	-0.18	188	0.98	-0.18	278	0.98	-0.18
10	0.99	-0.13	100	0.99	-0.13	190	0.99	-0.13	280	0.99	-0.13
12	0.99	-0.08	102	0.99	-0.08	192	0.99	-0.08	282	0.99	-0.08
14	1.00	-0.04	104	1.00	-0.04	194	1.00	-0.04	284	1.00	-0.04
16	1.00	-0.02	106	1.00	-0.02	196	1.00	-0.02	286	1.00	-0.02
18	1.00	0.00	108	1.00	0.00	198	1.00	0.00	288	1.00	0.00
20	1.00	0.00	110	1.00	0.00	200	1.00	0.00	290	1.00	0.00
22	1.00	-0.02	112	1.00	-0.02	202	1.00	-0.02	292	1.00	-0.02
24	1.00	-0.04	114	1.00	-0.04	204	1.00	-0.04	294	1.00	-0.04
26	0.99	-0.08	116	0.99	-0.08	206	0.99	-0.08	296	0.99	-0.08
28	0.99	-0.13	118	0.99	-0.13	208	0.99	-0.13	298	0.99	-0.13
30	0.98	-0.18	120	0.98	-0.18	210	0.98	-0.18	300	0.98	-0.18
32	0.97	-0.26	122	0.97	-0.26	212	0.97	-0.26	302	0.97	-0.26
34	0.96	-0.33	124	0.96	-0.33	214	0.96	-0.33	304	0.96	-0.33
36	0.95	-0.41	126	0.95	-0.41	216	0.95	-0.41	306	0.95	-0.41
38	0.95	-0.49	128	0.95	-0.49	218	0.95	-0.49	308	0.95	-0.49
40	0.94	-0.57	130	0.94	-0.57	220	0.94	-0.57	310	0.94	-0.57
42	0.93	-0.66	132	0.93	-0.66	222	0.93	-0.66	312	0.93	-0.66
44	0.92	-0.73	134	0.92	-0.73	224	0.92	-0.73	314	0.92	-0.73
46	0.91	-0.81	136	0.91	-0.81	226	0.91	-0.81	316	0.91	-0.81
48	0.90	-0.88	138	0.90	-0.88	228	0.90	-0.88	318	0.90	-0.88
50	0.90	-0.93	140	0.90	-0.93	230	0.90	-0.93	320	0.90	-0.93
52	0.89	-0.98	142	0.89	-0.98	232	0.89	-0.98	322	0.89	-0.98
54	0.89	-1.02	144	0.89	-1.02	234	0.89	-1.02	324	0.89	-1.02
56	0.89	-1.05	146	0.89	-1.05	236	0.89	-1.05	326	0.89	-1.05
58	0.88	-1.07	148	0.88	-1.07	238	0.88	-1.07	328	0.88	-1.07
60	0.88	-1.07	150	0.88	-1.07	240	0.88	-1.07	330	0.88	-1.07
62	0.88	-1.07	152	0.88	-1.07	242	0.88	-1.07	332	0.88	-1.07
64	0.88	-1.07	154	0.88	-1.07	244	0.88	-1.07	334	0.88	-1.07
66	0.88	-1.07	156	0.88	-1.07	246	0.88	-1.07	336	0.88	-1.07
68	0.88	-1.07	158	0.88	-1.07	248	0.88	-1.07	338	0.88	-1.07
70	0.88	-1.07	160	0.88	-1.07	250	0.88	-1.07	340	0.88	-1.07
72	0.89	-1.05	162	0.89	-1.05	252	0.89	-1.05	342	0.89	-1.05
74	0.89	-1.02	164	0.89	-1.02	254	0.89	-1.02	344	0.89	-1.02
76	0.89	-0.98	166	0.89	-0.98	256	0.89	-0.98	346	0.89	-0.98
78	0.90	-0.93	168	0.90	-0.93	258	0.90	-0.93	348	0.90	-0.93
80	0.90	-0.88	170	0.90	-0.88	260	0.90	-0.88	350	0.90	-0.88
82	0.91	-0.81	172	0.91	-0.81	262	0.91	-0.81	352	0.91	-0.81
84	0.92	-0.73	174	0.92	-0.73	264	0.92	-0.73	354	0.92	-0.73
86	0.93	-0.66	176	0.93	-0.66	266	0.93	-0.66	356	0.93	-0.66
88	0.94	-0.57	178	0.94	-0.57	268	0.94	-0.57	358	0.94	-0.57

**Electronics Research, Inc.**

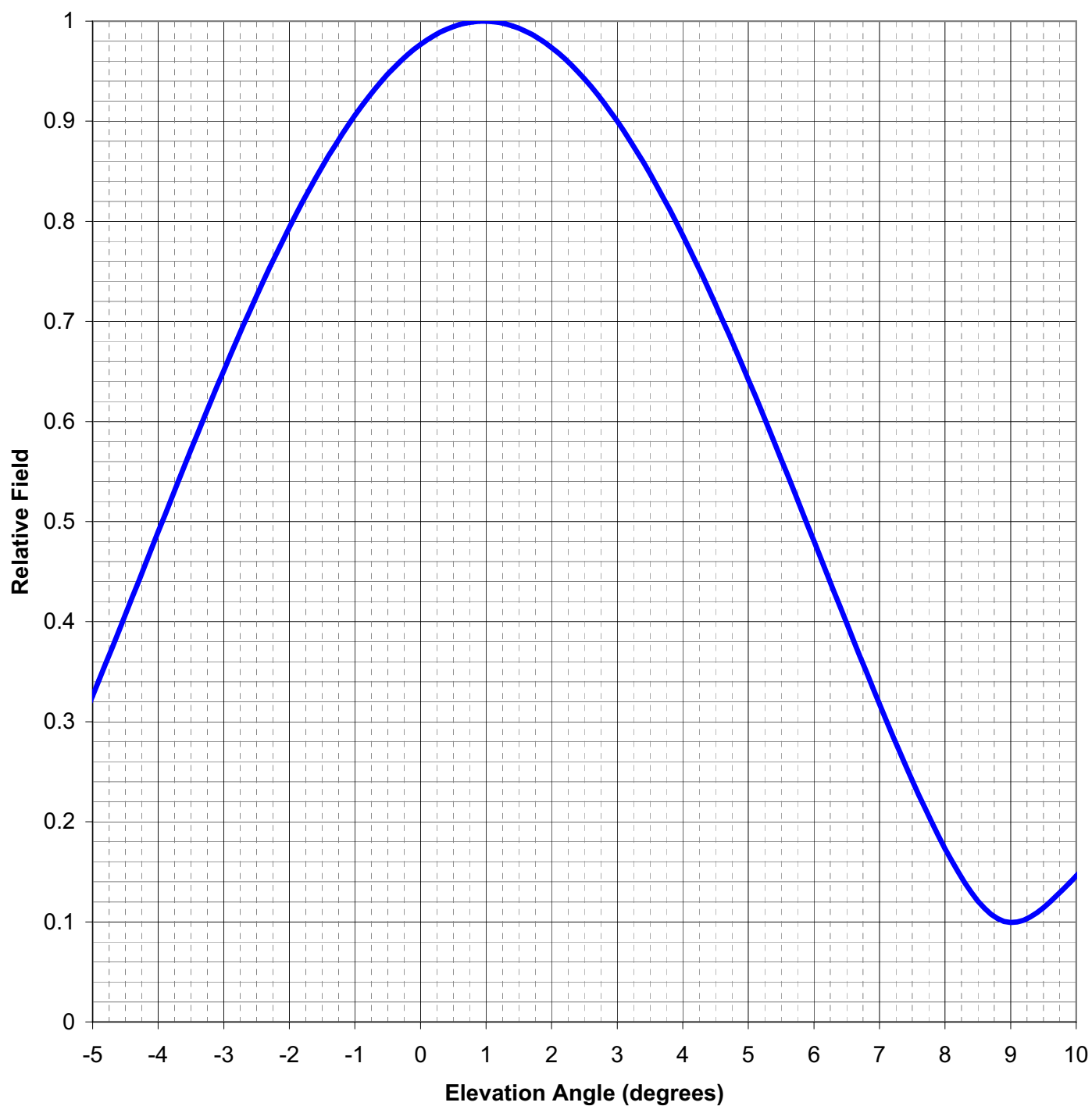
7777 Gardner Rd.

Chandler, IN 47610

ELEVATION PATTERN

TYPE: CH8ELH
Directivity: Numeric dBd
Main Lobe:
Horizontal:

Beam Tilt: _____
Polarization: Horizontal
Channel: 8 (DTV)
Location: Lima, Ohio



Electronics Research, Inc.
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60462

TABULATED DATA FOR ELEVATION PATTERN**TYPE: CH8ELH**

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
-5.00	0.33	-9.74	-0.50	0.95	-0.47	2.00	0.97	-0.23	6.50	0.40	-8.00
-4.90	0.34	-9.32	-0.40	0.95	-0.41	2.10	0.97	-0.28	6.60	0.38	-8.36
-4.80	0.36	-8.92	-0.30	0.96	-0.35	2.20	0.96	-0.33	6.70	0.37	-8.74
-4.70	0.37	-8.53	-0.20	0.97	-0.30	2.30	0.96	-0.39	6.80	0.35	-9.13
-4.60	0.39	-8.16	-0.10	0.97	-0.25	2.40	0.95	-0.45	6.90	0.33	-9.54
-4.50	0.41	-7.80	0.00	0.98	-0.20	2.50	0.94	-0.51	7.00	0.32	-9.96
-4.40	0.42	-7.46	0.05	0.98	-0.20	2.60	0.93	-0.59	7.10	0.30	-10.40
-4.30	0.44	-7.13	0.10	0.98	-0.16	2.70	0.93	-0.66	7.20	0.29	-10.86
-4.20	0.46	-6.81	0.15	0.98	-0.16	2.80	0.92	-0.74	7.30	0.27	-11.34
-4.10	0.47	-6.50	0.20	0.99	-0.13	2.90	0.91	-0.82	7.40	0.26	-11.83
-4.00	0.49	-6.20	0.25	0.99	-0.13	3.00	0.90	-0.91	7.50	0.24	-12.35
-3.90	0.51	-5.91	0.30	0.99	-0.10	3.10	0.89	-1.01	7.60	0.23	-12.89
-3.80	0.52	-5.63	0.35	0.99	-0.10	3.20	0.88	-1.11	7.70	0.21	-13.44
-3.70	0.54	-5.37	0.40	0.99	-0.07	3.30	0.87	-1.21	7.80	0.20	-14.02
-3.60	0.56	-5.11	0.45	0.99	-0.07	3.40	0.86	-1.32	7.90	0.19	-14.62
-3.50	0.57	-4.86	0.50	0.99	-0.05	3.50	0.85	-1.44	8.00	0.17	-15.23
-3.40	0.59	-4.62	0.55	0.99	-0.05	3.60	0.84	-1.56	8.10	0.16	-15.86
-3.30	0.60	-4.38	0.60	1.00	-0.03	3.70	0.82	-1.68	8.20	0.15	-16.49
-3.20	0.62	-4.16	0.65	1.00	-0.03	3.80	0.81	-1.81	8.30	0.14	-17.13
-3.10	0.64	-3.94	0.70	1.00	-0.02	3.90	0.80	-1.95	8.40	0.13	-17.75
-3.00	0.65	-3.73	0.75	1.00	-0.02	4.00	0.79	-2.09	8.50	0.12	-18.35
-2.90	0.67	-3.53	0.80	1.00	-0.01	4.10	0.77	-2.24	8.60	0.11	-18.89
-2.80	0.68	-3.33	0.85	1.00	-0.01	4.20	0.76	-2.39	8.70	0.11	-19.35
-2.70	0.70	-3.14	0.90	1.00	0.00	4.30	0.75	-2.55	8.80	0.10	-19.72
-2.60	0.71	-2.96	0.95	1.00	0.00	4.40	0.73	-2.72	8.90	0.10	-19.96
-2.50	0.73	-2.79	1.00	1.00	0.00	4.50	0.72	-2.89	9.00	0.10	-20.05
-2.40	0.74	-2.62	1.05	1.00	0.00	4.60	0.70	-3.07	9.10	0.10	-20.02
-2.30	0.75	-2.46	1.10	1.00	0.00	4.70	0.69	-3.25	9.20	0.10	-19.85
-2.20	0.77	-2.30	1.15	1.00	0.00	4.80	0.67	-3.45	9.30	0.10	-19.58
-2.10	0.78	-2.15	1.20	1.00	-0.01	4.90	0.66	-3.64	9.40	0.11	-19.24
-2.00	0.79	-2.00	1.25	1.00	-0.01	5.00	0.64	-3.85	9.50	0.11	-18.85
-1.90	0.81	-1.87	1.30	1.00	-0.02	5.10	0.63	-4.06	9.60	0.12	-18.43
-1.80	0.82	-1.73	1.35	1.00	-0.02	5.20	0.61	-4.29	9.70	0.13	-17.99
-1.70	0.83	-1.60	1.40	1.00	-0.04	5.30	0.59	-4.52	9.80	0.13	-17.56
-1.60	0.84	-1.48	1.45	1.00	-0.04	5.40	0.58	-4.75	9.90	0.14	-17.13
-1.50	0.85	-1.37	1.50	0.99	-0.06	5.50	0.56	-5.00	10.00	0.15	-16.72
-1.40	0.87	-1.25	1.55	0.99	-0.06	5.60	0.55	-5.25			
-1.30	0.88	-1.15	1.60	0.99	-0.09	5.70	0.53	-5.52			
-1.20	0.89	-1.05	1.65	0.99	-0.09	5.80	0.51	-5.79			
-1.10	0.90	-0.95	1.70	0.99	-0.12	5.90	0.50	-6.07			
-1.00	0.91	-0.86	1.75	0.99	-0.12	6.00	0.48	-6.36			
-0.90	0.91	-0.77	1.80	0.98	-0.15	6.10	0.46	-6.67			
-0.80	0.92	-0.69	1.85	0.98	-0.15	6.20	0.45	-6.98			
-0.70	0.93	-0.61	1.90	0.98	-0.19	6.30	0.43	-7.31			
-0.60	0.94	-0.54	1.95	0.98	-0.19	6.40	0.41	-7.65			

**Electronics Research, Inc.**

10500 W. 153rd Street

Orland Park, Illinois U.S.A. 60462


REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

PARTS LIST				
QTY.	UM	PART NO.	DESCRIPTION	ITEM NO.
6	EA	30848-2	ROUND ADAPTOR/ STANDOFF KIT	20
6	EA	43211A	CABLE HANGER KIT	19
8	EA	HT4-50	HELIAX .50 X 265" LG.	18
16	EA	H4MPB-014	CONNECTOR FOR .50 HELIAX	17
44	EA	NU1210GA	GALV. 3/4-10 HEX NUT	16
44	EA	WL12GA	SS 1/2" SPLIT LOCKWASHER	15
12	EA	HC0048	SS HOSE CAMP #48	14
16	EA	1060A	7/8" ELBOW	13
6	EA	BT17055-120	POWER DIVIDER BRACKET	12
8	EA	A17055-102	24" LINE CONNECTION	11
32	EA	HC0028	SS HOSE CAMP #28	10
22	EA	BT17055-14	GALV. U-BOLT 3/4-10 X 5 7/8	9
32	EA	BT17055-112	HORIZONTAL ADJ. ANGLE	8
32	EA	BT17055-111	VERTICAL ADJUSTMENT ANGLE	7
4	EA	BT17055-110	ELEMENT BRACKET	6
16	EA	BT17055-115	ADJUSTMENT ANGLE	5
8	EA	A17055-101	4" ELEMENT LINE CONNECTION	4
8	EA	A17055-100	ELEMENT TEE CONNECTION	3
1	EA	PDH3380H	POWER DIVIDER	2
8	EA	AE-540	540 ELEMENT	1

PARTS LIST				
QTY.	UM	PART NO.	DESCRIPTION	ITEM NO.
96	EA	NU0616	3/8-16 HEX NUT, SS	34
96	EA	WF06SS	3/8" FLAT WASHER, SS	33
96	EA	WL06SS	3/8" SPLIT LOCKWASHER, SS	32
64	EA	SC0616H0125	3/8-16 X 1.25 LG H.H., SS	31
32	EA	SC0616H0175	3/8-16 X 1.75 LG H.H., SS	30
6	EA	C00701	PRESSURE FLANGE	29
1	EA	RLA4300-21	3" HARDWARE KIT	28
1	EA	RLA300-50	3" PRESSURE CAP	27
8	EA	3017	TANK (SHRADER) VALVE	26
32	EA	184059	HARDWARE KIT WITCHES CAP	25
32	EA	38091	METAL 7/8" WITCHES CAP	24
1	EA	ACX350-10SE	3" 90° ELBOW	23
2	EA	MACX350A-41	3" FIELD CUT 5'	22
1	EA	RLA300-13	RIGID MOUNT 3"	21

PARTS LIST				
QTY.	UM	PART NO.	DESCRIPTION	ITEM NO.

THIRD ANGLE PROJECTION			
MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES	FINISH
—	—	—	—
—	—	—	ALL SURFACES

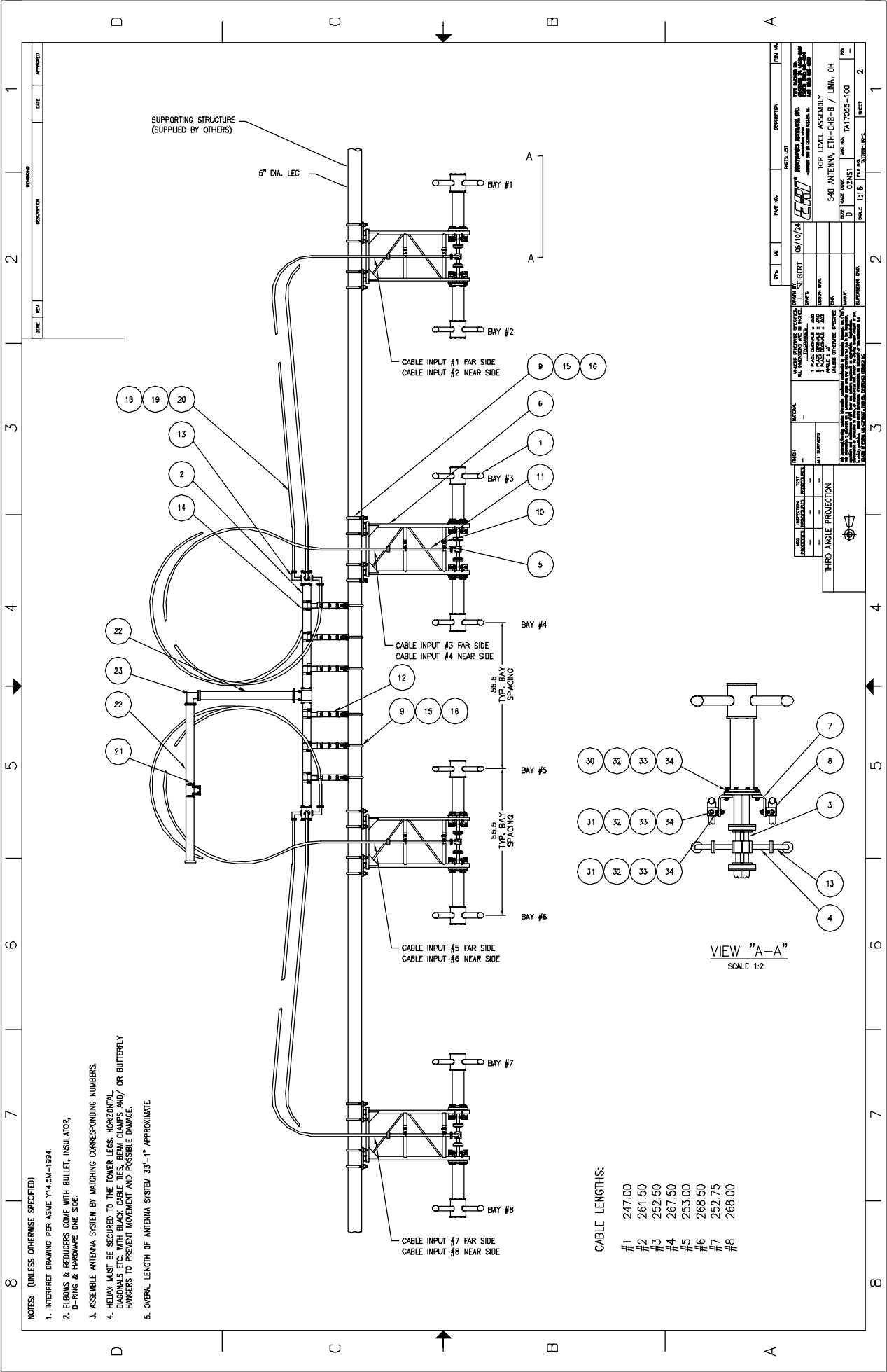
THIRD ANGLE PROJECTION			
			
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UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.			
TOLERANCES			
1. PLACE DECIMALS ± .030			
2. PLACE DECIMALS ± .010			
3. PLACE DECIMALS ± .003			
ANGLE ± .5°			
UNLESS OTHERWISE SPECIFIED			
DRAWN BY L. SEIBERT			
06/11/17			
DRAFT.			
DESIGN MGR.			
ENG.			
MANUF.			
SUPERSEDES DWG.			

ELECTRONICS RESEARCH, INC.			
7777 GARDNER RD.			
CHANDLER, IN. 47810-9857			
PHONE: (317) 985-8000			
FAX: (317) 925-4466			
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TOP LEVEL ASSEMBLY			
540 ANTENNA, ETH-CH8-8 / LIMA, OH			
SIZE	CAGE CODE	DWG NO.	REV
B	0ZNS1	TA17055-100	—

SCALE			
FILE NO.	SHEET	1 OF 3	
BOMT055-100-1			



NOTES: (UNLESS OTHERWISE SPECIFIED)

- 1. INTERPRET DRAWING PER ASME Y14.3M-1994.
- 2. ELBOWS & REDUCERS COME WITH BULLET, INSULATOR, O-RING & HARDWARE ONE SIDE.
- 3. ASSEMBLE ANTENNA SYSTEM BY MATCHING CORRESPONDING NUMBERS.
- 4. HELIX MUST BE SECURED TO THE TOWER LEGS. HORIZONTAL DIAGONALS ETC. WITH BLACK CABLE TIES, BEAM CLAMPS AND/ OR BUTTERFLY HANGERS TO PREVENT MOVEMENT AND POSSIBLE DAMAGE.
- 5. OVERALL LENGTH OF ANTENNA SYSTEM 33'-1" APPROXIMATE

CABLE LENGTHS:

- #1 247.00
- #2 261.50
- #3 252.50
- #4 267.50
- #5 253.00
- #6 268.50
- #7 252.75
- #8 268.00

VIEW "A-A"
SCALE 1:2

REV.	DATE	BY	CHKD.	DESCRIPTION	DATE
1	06/19/04	ISELBERT		ISSUED FOR CONSTRUCTION	
2	12/05/06	ISELBERT		REVISED TO ADD BAY #8	

PROJECT NO.	TA17055-100
PROJECT NAME	540 ANTENNA ETH-CIB-B / LUNA, OH
PROJECT LOCATION	TA17055-100
PROJECT OWNER	NAVY
PROJECT MANAGER	DAVID J. BROWN
PROJECT ENGINEER	DAVID J. BROWN
PROJECT ARCHITECT	DAVID J. BROWN
PROJECT CONTRACTOR	DAVID J. BROWN
PROJECT SUBCONTRACTOR	DAVID J. BROWN
PROJECT VENDOR	DAVID J. BROWN
PROJECT MATERIALS	DAVID J. BROWN
PROJECT EQUIPMENT	DAVID J. BROWN
PROJECT SERVICES	DAVID J. BROWN
PROJECT OTHERS	DAVID J. BROWN

SCALE	1:15
DATE	12/05/06
BY	ISELBERT
CHKD.	
DATE	

Section III - 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 _____			
2. Operating Constants			
Transmitter power output (average power at input to transmission line, after any filter attached to the transmitter, if used)		Transmission line power loss	
kW		dBk	
dB		dB	
Antenna Input power	Maximum antenna power gain	Effective radiated power (average power)	
dBk	dB	kW	dBk
3. Antenna Data			
Manufacturer		Model	

NOTE: In addition to the information called for in the Certification Checklist, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

CERTIFICATION

4. Main Studio Location. The main studio location complies with 47 C.F.R. Section 73.1125.	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Explanation in Exhibit No.
5. Constructed Facility. The facility was constructed as authorized in the underlying construction permit or complies with 47 C.F.R. Section 73.1690.	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Explanation in Exhibit No.
6. Special Operating Conditions. The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit.	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Explanation in Exhibit No.
An exhibit may be required. Review the underlying construction permit.		Exhibit No.
7. Transmitter. The transmitter complies with 47 C.F.R. Section 73.1660.	<input type="checkbox"/> Yes <input type="checkbox"/> No	See Explanation in Exhibit No.

PREPARER'S CERTIFICATION ON PAGE 6 MUST BE COMPLETED AND SIGNED.

APPLICATION FILED PURSUANT TO 47 C.F.R. SECTIONS 73.1675(c) or 73.1690(c).

Only applicants filing this application pursuant to 47 C.F.R. Sections 73.1675(c) or 73.1690(c) must complete the following

8. **Changing transmitter power output.** Is this application being filed to authorize a change in transmitter power output caused by the replacement of an omnidirectional antenna with another omnidirectional antenna or an alteration of the transmission line system? See 47 C.F.R. Sections 73.1690(c)(1) and (c)(10). ☐ Yes ☐ No

9. **Replacing a directional antenna.** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(3) to replace a directional antenna with another directional antenna? ☐ Yes ☐ No

If "Yes" to the above, the applicant certifies the following:

- a. **Pattern of Directional Antenna.** The proposed theoretical antenna pattern complies with 47 C.F.R. Section 73.1690(c)(3). **Exhibit is required.** ☐ Yes ☐ No

See Explanation in Exhibit No.

Exhibit No.

10. **Use a formerly licensed main facility as an auxiliary facility.** Is this application being filed pursuant to 47 C.F.R. Section 73.1675(c)(1) to request authorization to use a formerly licensed main facility as an auxiliary facility and/or change the ERP of the proposed auxiliary facility? ☐ Yes ☐ No

If "Yes" to the above, the applicant certifies the following:

- a. **Auxiliary antenna service area.** The proposed auxiliary facility complies with 47 C.F.R. Section 73.1675(a). **Exhibit is required.** ☐ Yes ☐ No

See Explanation in Exhibit No.

- b. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). ☐ Yes ☐ No

See Explanation in Exhibit No.

By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

11. **Change the license status.** Is this application being filed pursuant to 47 C.F.R. Section 73.1690(c)(9) to change the license status from commercial to noncommercial or from noncommercial to commercial? ☐ Yes ☐ No

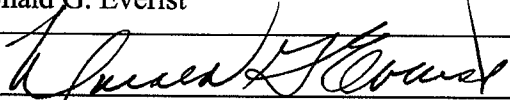
Exhibit No.

If "Yes" to the above, submit an exhibit providing full particulars. For applications changing license status from commercial to noncommercial, include Section II of FCC Form 340 as an exhibit to this application.

PREPARER'S CERTIFICATION ON PAGE 6 MUST BE COMPLETED AND SIGNED.

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 March 1, 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	

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