

ENGINEERING STATEMENT  
IN SUPPORT OF AN APPLICATION  
TO CONSTRUCT REPACK FACILITIES  
PURSUANT TO DA 17-314  
ON BEHALF OF  
EASTERN ILLINOIS UNIVERSITY  
**WEIU-TV, CHARLESTON, ILLINOIS**  
CHANNEL 30 174 KW ERP 141 METERS HAAT

JULY 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;

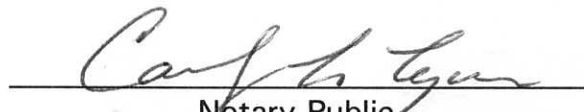
That his qualifications are a matter of record in the Federal Communications Commission;

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 10<sup>th</sup> day of July, 2017.

  
Notary Public

My Commission Expires: 2/28/2018



### Introduction

This engineering statement has been prepared on behalf of Eastern Illinois University ("WEIU"), licensee of TV station WEIU-TV, Charleston, Illinois, in support of its request to construct repacked facilities on Channel 30 pursuant to DA 17-314. WEIU-TV is licensed to operate on Channel 50 with an effective radiated power ("ERP") of 255 kW (non-directional) and an HAAT of 146 meters.

### Antenna Site

The existing WEIU-TV antenna site is located 7 miles north-northwest of the Coles County Memorial, Charleston, Illinois. The Antenna Structure Registration number is 1245858 and due to minor elevation changes, the ASRN will be updated.

The geographic coordinates of the existing tower are as follows:

North Latitude: 39° 34' 15.0"

West Longitude: 88° 18' 25.5"

(NAD-27)

North Latitude: 39° 34' 15"

West Longitude: 88° 18' 26"

(NAD-83)

The repacked WEIU-TV antenna will be side-mounted on the tower at 141.7 meters (465 feet) above ground level. The following data shows the pertinent information concerning the proposed operation. Due to the redetermination of the ground elevation and the greater length of the antenna, a 5 meter reduction in height above average terrain occurs.

Antenna and Elevation Data

Antenna: ERI, Type ALP24M3-HSOC-30 or equivalent

Beam Tilt 0.75° electrical

Directional Max.  
Power Gain 42.86 16.32 dB  
(See Exhibits E-2 per  
Section 73.625(c))

Transmission Line: ERI, Type MACX675B-3, 550 ft., loss 0.119 dB/100 ft.

Power Data

Transmitter output filter output	4.72 kW	6.74 dBk
Transmission line loss	86.05%	0.65 dB
Input power to the antenna	4.06 kW	6.09 dBk
Antenna power gain, Main Lobe Horizontal	42.86	16.32 dB
Effective Radiated Power, Maximum Horizontal	174 kW	22.41 dBk

Elevation Data

Elevation of the site above mean sea level	204.5 meters (671 feet)
Elevation of the top of the existing supporting structure above ground including appurtenances	153 meters (502 feet)
Elevation of the top of supporting structure above mean sea level including appurtenances	357.5 meters (1173 feet)
Height of TV antenna radiation center meters above ground	141.7 meters (465 feet)
Height of TV antenna radiation center above mean sea level	346.2 meters (1136 feet)

Height of TV antenna radiation center  
above average terrain

141 meters  
(462.6 feet)

#### Authorized Effective Radiated Power

Station WEIU-DT is proposing to operate its facility with a maximum ERP of 174 kW at 141 meters HAAT using a directional transmitting antenna.

The attached map (Exhibit E-3) shows the computed F(50,90) 48 dBu and 40.325 dBu contour as predicted according to Section 73.625(b) of the Commission's Rules. Exhibit E-4 provides a comparison of the licensed 41 dBu contour and the repacked Channel 30, 40.325 dBu contour.

#### Principal Community Coverage

The operation proposed by station WEIU-DT places a predicted 48 dBu contour over the community of Charleston, Illinois.

#### Topographic Data

The average elevation data of the eight cardinal radials from 3.2 to 16.1 kilometers, is based on the NGDC 3-second computerized terrain database and has been previously determined.

#### Contour Data

Utilizing the formula in Section 73.684(c)(1) for the effective heights, 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 at these angles is greater than 90% of the maximum.

Table I provides the distances of every ten degrees in azimuth to the predicted F(50,90) 48 dBu and 40.325 dBu contours, the average elevations and the effective antenna heights.

The distances along each radial to the limits of F(50,90) 48 dBu and 40.325 dBu contours were determined as specified in Section 73.625(c) by reference to the propagation data for

Channels 14-69, as published by the Commission in Figures 10b and 10c, Section 73.699 of its rules.

#### Other Proposed or Licensed Broadcast Facilities

There are no FM and no other TV stations (WEIU-TV) located within 100 meters of the existing site. There are no AM stations within 3.22 km of the proposed site. No objectionable interference problems are anticipated. However, if any problems occur, the licensee will take the necessary steps to resolve them.

#### Environment Statement

The radiofrequency field level ("RFF") contribution of the proposed facility will be calculated for a point 2 meters above ground at the base of the tower.

The RFF 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

#### Station WEIU-DT (proposed)

Channel 30

Freq: 566-572 MHz Range

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

ERP = 174 kW (Horizontal only)

R = 139.7 meters (antenna height above ground -2 meters)

F = 0.106 (based on maximum field from 30 to 90 degrees below the horizontal, see Exhibit E-2)

$$S = 3.3 \mu\text{W}/\text{cm}^2$$

The limit for an uncontrolled environment (general population) for this frequency is  $381 \mu\text{W}/\text{cm}^2$ .

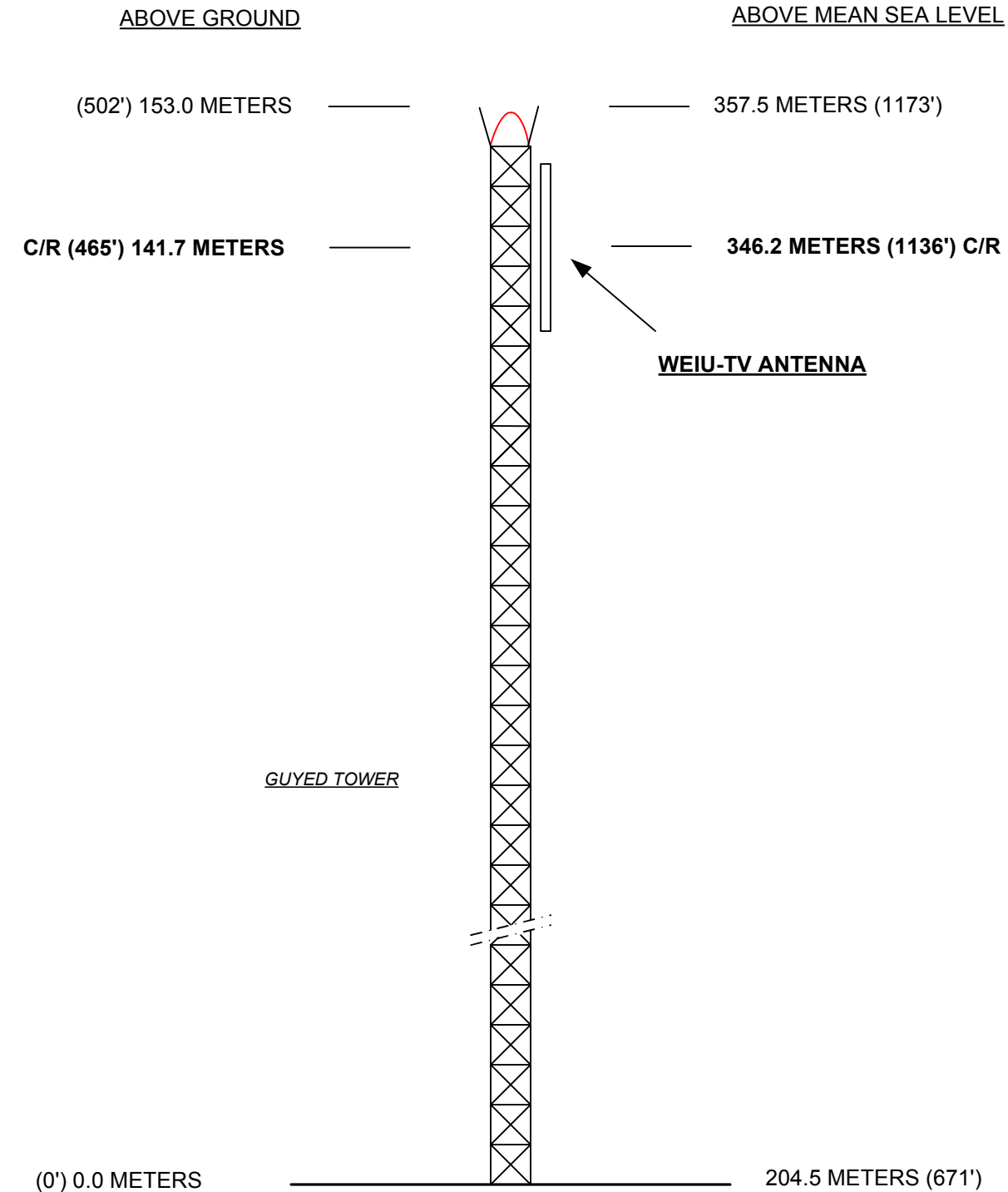
**WEIU-DT contributes less than one percent RFF level for an uncontrolled environment (general population) two meters above the ground.**

The licensee indicates that all authorized personnel climbing the tower will be alerted to the potential zones of high field levels, and if necessary, the station will operate with reduced power or terminated power.

Summary of Environmental Assessment

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

- (a)(1) The proposed facilities on the existing tower will not be located in an officially designated wilderness area.
- (a)(2) The proposed facilities on the existing tower will not be located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities on the existing tower will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities on the existing tower will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities on the existing tower will not affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The proposed facilities on the existing tower will not be located near any known Indian religious sites.
- (a)(6) The proposed facilities on the existing tower will not be located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing guyed tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines. Authorized personnel will be alerted to areas of the antennas where potential radiation levels are in excess of the FCC guidelines.



NOT TO SCALE

EXHIBIT E - 1  
VERTICAL SKETCH  
FOR THE REPACKING OPERATION OF  
**WEIU-TV, CHARLESTON, ILLINOIS**  
CHANNEL 30 174 kW DA ERP 141 METERS HAAT  
JUNE 2017

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



EXHIBIT E-2

ANTENNA MANUFACTURER DATA

***PRELIMINARY SPECIFICATION FOR  
ERI ALP HORIZONTALLY POLARIZED  
COAXIAL SLOTTED ARRAY ANTENNA***

*Prepared For Channel 30*

*March 30, 2017*

**ANTENNA TYPE:  
ALP24M3-HSOC-30**

**SPECIFICATION NO:**



## **PRELIMINARY SPECIFICATION FOR ERI ALP HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA**

### **ELECTRICAL CHARACTERISTICS:**

CHANNEL:	DTV:	30
FREQUENCY RANGE:	DTV:	566.00 - 572.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol:	ALP-OC
ELEVATION PATTERN NUMBER:	Hor Pol:	ALP24M3
AZIMUTH DIRECTIVITY:	Hor Pol:	1.70 (2.30 dB)
ELEVATION DIRECTIVITY:	Hor Pol:	25.21 (14.02 dBd)
PEAK POWER GAIN:	Hor Pol:	42.86 (16.32 dBd)
GAIN AT HORIZONTAL:	Hor Pol:	22.59 (13.54 dBd)
ELECTRICAL BEAM TILT:		-0.75 Degrees
INPUT POWER REQUIRED:		4.060 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:		9.00 kW Average Power
INPUT TYPE:		3-1/8" EIA
ANTENNA VSWR (MAXIMUM):	DTV:	1.10 Over 6 MHz of Channel

*Preliminary, subject to final design and review.*

## PRELIMINARY SPECIFICATION FOR ERI ALP HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

### MECHANICAL CHARACTERISTICS:

#### MOUNTING CONFIGURATION:

\*(Tower Interface supplied and  
installed by others.)

Side Mount

HEIGHT OF ANTENNA: 57.8 feet

HEIGHT OF CENTER OF  
RADIATION: 28.9 feet

OVERALL HEIGHT (A): 57.8 feet

DEICING: Unpressurized Slot Cover Radome Enclosure

RADOME DIAMETER (C): CONTACT ERI

RADOME COLOR: GRAY

CLIMBING DEVICE: NOT APPLICABLE

CALCULATED WEIGHT<sup>1</sup>: 340 lbs.

ANTENNA AREA<sup>3</sup>:

FRONT AREA:

$C_A A_C$ : 20.5 square feet

$A_C$ : 17.1 square feet

SIDE AREA:

$C_A A_C$ : 30.1 square feet

$A_C$ : 25.1 square feet

***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 transitional and three rotational degrees of freedom.***

<sup>1</sup> Calculated weight is based on the PRELIMINARY design of the antenna. The actual weight of the antenna will be within  $\pm 10\%$  of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna.

<sup>3</sup> Antenna Area is calculated per EIA/TIA-RS222-F.

**Note:** Localized conditions may require higher wind speed specifications than TIA/EIA specifications. Check with local authorities to verify wind speed requirements.

Preliminary, subject to final design and review.

## Broadcast Antenna System Power Analysis

### Channel 30

### ALP24M3-HSOC-30

#### ANTENNA PARAMETERS

##### Azimuth Directivity:

Hor. Pol: 1.70  
dBd: 2.30

##### Elevation Directivity:

Hor. Pol: 25.21  
dBd: 14.02

#### TRANSMISSION LINE:

##### VERTICAL RUN:

Type: 1329650  
Length, ft: 500 ft.  
Attenuation, dB/100 ft: 0.119 dB/100 ft.

##### HORIZONTAL RUN:

Type: 1329650  
Length, ft: 50 ft.  
Attenuation, dB/100 ft: 0.119 dB/100 ft.

Line Efficiency: 86.05 %

#### ERP:

kW: 174.00  
dBk: 22.41

#### POWER GAIN:

Ratio: 42.86  
dBd: 16.32

#### ANTENNA INPUT:

kW: 4.06  
dBk: 6.09

#### LINE LOSS:

kW: 0.66  
dB: 0.65

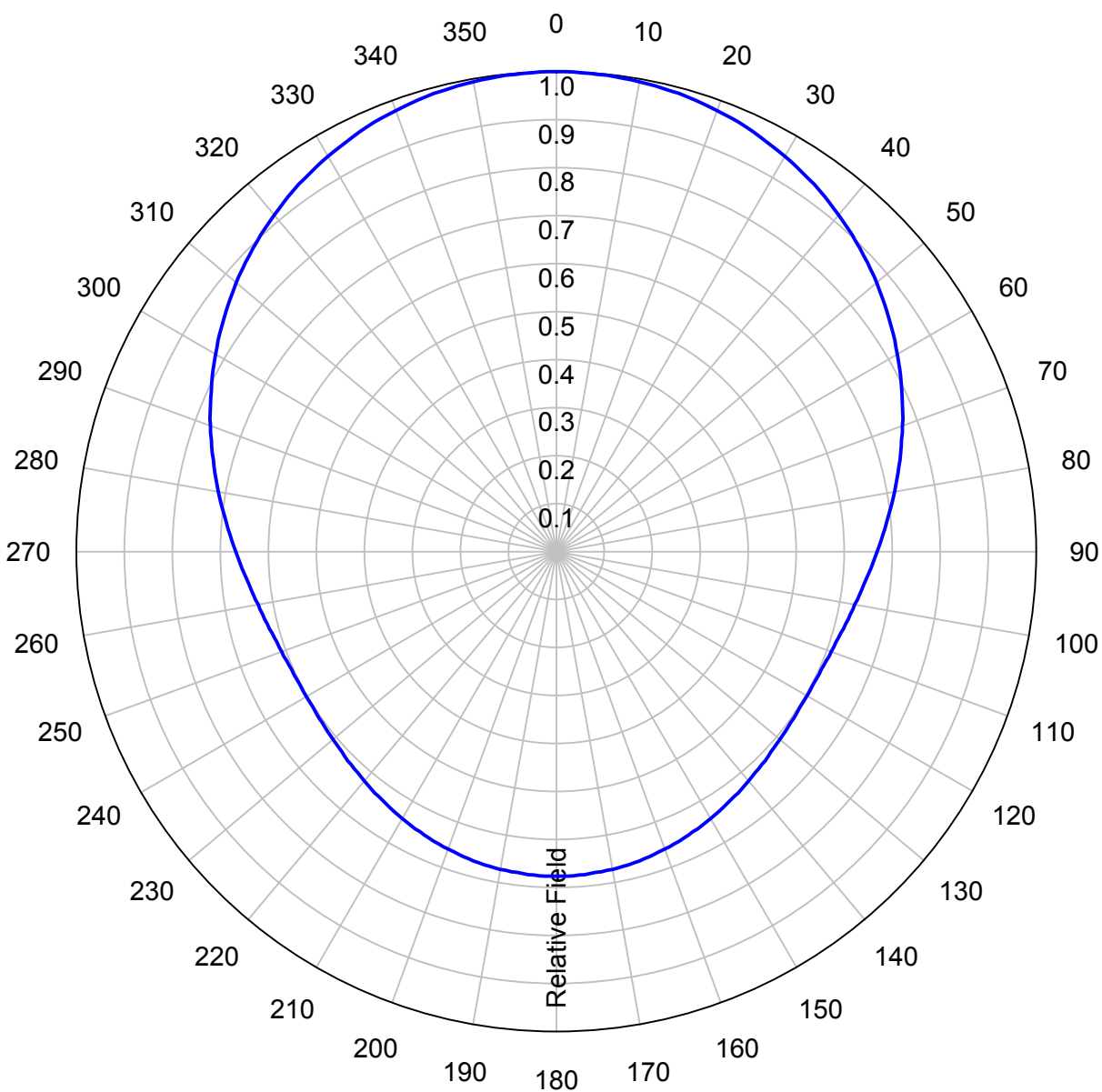
#### TRANSMITTER POWER:

kW: 4.72  
dBk: 6.74

Preliminary, subject to final design and review.

**AZIMUTH PATTERN****Type:**ALP-OC**Channel:**30**Directivity:**NumericdBd1.702.30**Location:****Polarization:**Horizontal**Peak(s) at:**

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



*Preliminary, subject to final design and review.*

## TABULATED DATA FOR AZIMUTH PATTERN

Type: ALP-OC

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	1.000	0.00	92	0.660	-3.61	184	0.675	-3.41	276	0.695	-3.16
2	1.000	0.00	94	0.652	-3.72	186	0.674	-3.43	278	0.705	-3.04
4	0.999	-0.01	96	0.644	-3.82	188	0.673	-3.44	280	0.715	-2.91
6	0.998	-0.02	98	0.638	-3.90	190	0.672	-3.45	282	0.725	-2.79
8	0.996	-0.03	100	0.631	-4.00	192	0.670	-3.48	284	0.735	-2.67
10	0.994	-0.05	102	0.626	-4.07	194	0.668	-3.50	286	0.746	-2.55
12	0.992	-0.07	104	0.621	-4.14	196	0.665	-3.54	288	0.756	-2.43
14	0.989	-0.10	106	0.616	-4.21	198	0.662	-3.58	290	0.767	-2.30
16	0.986	-0.12	108	0.612	-4.26	200	0.659	-3.62	292	0.778	-2.18
18	0.982	-0.16	110	0.609	-4.31	202	0.656	-3.66	294	0.788	-2.07
20	0.978	-0.19	112	0.606	-4.35	204	0.653	-3.70	296	0.799	-1.95
22	0.974	-0.23	114	0.604	-4.38	206	0.649	-3.76	298	0.810	-1.83
24	0.969	-0.27	116	0.603	-4.39	208	0.646	-3.80	300	0.820	-1.72
26	0.963	-0.33	118	0.602	-4.41	210	0.642	-3.85	302	0.831	-1.61
28	0.957	-0.38	120	0.602	-4.41	212	0.638	-3.90	304	0.841	-1.50
30	0.951	-0.44	122	0.602	-4.41	214	0.634	-3.96	306	0.851	-1.40
32	0.945	-0.49	124	0.603	-4.39	216	0.630	-4.01	308	0.861	-1.30
34	0.938	-0.56	126	0.604	-4.38	218	0.627	-4.05	310	0.871	-1.20
36	0.931	-0.62	128	0.606	-4.35	220	0.623	-4.11	312	0.880	-1.11
38	0.923	-0.70	130	0.608	-4.32	222	0.619	-4.17	314	0.889	-1.02
40	0.915	-0.77	132	0.610	-4.29	224	0.616	-4.21	316	0.898	-0.93
42	0.907	-0.85	134	0.613	-4.25	226	0.613	-4.25	318	0.907	-0.85
44	0.898	-0.93	136	0.616	-4.21	228	0.610	-4.29	320	0.915	-0.77
46	0.889	-1.02	138	0.619	-4.17	230	0.608	-4.32	322	0.923	-0.70
48	0.880	-1.11	140	0.623	-4.11	232	0.606	-4.35	324	0.931	-0.62
50	0.871	-1.20	142	0.627	-4.05	234	0.604	-4.38	326	0.938	-0.56
52	0.861	-1.30	144	0.630	-4.01	236	0.603	-4.39	328	0.945	-0.49
54	0.851	-1.40	146	0.634	-3.96	238	0.602	-4.41	330	0.951	-0.44
56	0.841	-1.50	148	0.638	-3.90	240	0.602	-4.41	332	0.957	-0.38
58	0.831	-1.61	150	0.642	-3.85	242	0.602	-4.41	334	0.963	-0.33
60	0.820	-1.72	152	0.646	-3.80	244	0.603	-4.39	336	0.969	-0.27
62	0.810	-1.83	154	0.649	-3.76	246	0.604	-4.38	338	0.974	-0.23
64	0.799	-1.95	156	0.653	-3.70	248	0.606	-4.35	340	0.978	-0.19
66	0.788	-2.07	158	0.656	-3.66	250	0.609	-4.31	342	0.982	-0.16
68	0.778	-2.18	160	0.659	-3.62	252	0.612	-4.26	344	0.986	-0.12
70	0.767	-2.30	162	0.662	-3.58	254	0.616	-4.21	346	0.989	-0.10
72	0.756	-2.43	164	0.665	-3.54	256	0.621	-4.14	348	0.992	-0.07
74	0.746	-2.55	166	0.668	-3.50	258	0.626	-4.07	350	0.994	-0.05
76	0.735	-2.67	168	0.670	-3.48	260	0.631	-4.00	352	0.996	-0.03
78	0.725	-2.79	170	0.672	-3.45	262	0.638	-3.90	354	0.998	-0.02
80	0.715	-2.91	172	0.673	-3.44	264	0.644	-3.82	356	0.999	-0.01
82	0.705	-3.04	174	0.674	-3.43	266	0.652	-3.72	358	1.000	0.00
84	0.695	-3.16	176	0.675	-3.41	268	0.660	-3.61	360	1.000	0.00
86	0.686	-3.27	178	0.676	-3.40	270	0.668	-3.50			
88	0.677	-3.39	180	0.676	-3.40	272	0.677	-3.39			
90	0.668	-3.50	182	0.676	-3.40	274	0.686	-3.27			

Preliminary, subject to final design and review.

## **TABULATED DATA FOR AZIMUTH PATTERN FCC FILING FORMAT**

Type: ALP-OC

Polarization: Horizontal

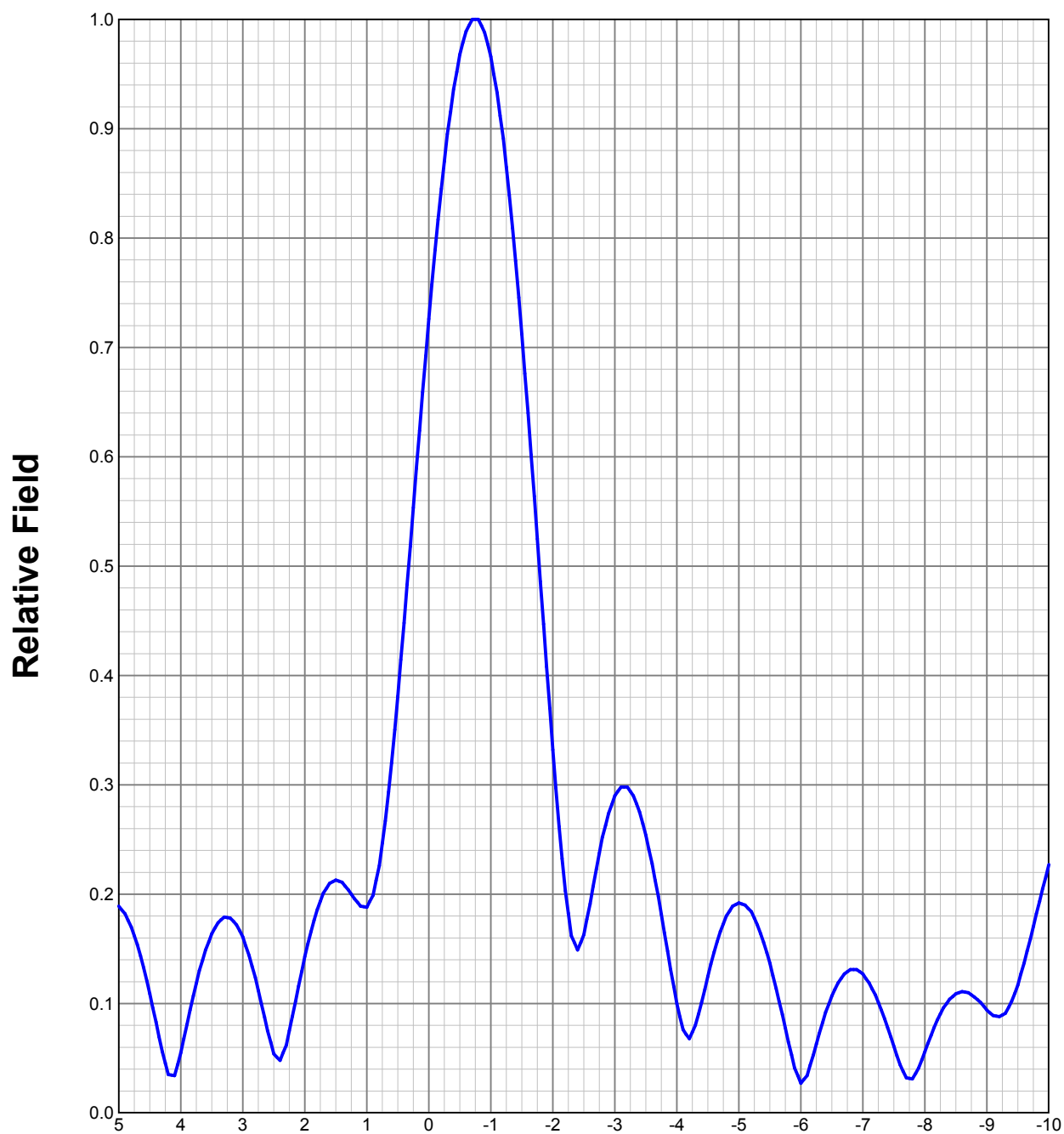
<b>ANGLE</b>	<b>FIELD</b>	<b>ERP (kW)</b>	<b>ERP (dBk)</b>
0	1.000	174.000	22.405
10	0.994	171.918	22.353
20	0.978	166.428	22.212
30	0.951	157.366	21.969
40	0.915	145.677	21.634
50	0.871	132.004	21.206
60	0.820	116.998	20.682
70	0.767	102.362	20.101
80	0.715	88.953	19.492
90	0.668	77.643	18.901
100	0.631	69.280	18.406
110	0.609	64.533	18.098
120	0.602	63.058	17.997
130	0.608	64.322	18.084
140	0.623	67.534	18.295
150	0.642	71.717	18.556
160	0.659	75.565	18.783
170	0.672	78.576	18.953
180	0.676	79.514	19.004
190	0.672	78.576	18.953
200	0.659	75.565	18.783
210	0.642	71.717	18.556
220	0.623	67.534	18.295
230	0.608	64.322	18.084
240	0.602	63.058	17.997
250	0.609	64.533	18.098
260	0.631	69.280	18.406
270	0.668	77.643	18.901
280	0.715	88.953	19.492
290	0.767	102.362	20.101
300	0.820	116.998	20.682
310	0.871	132.004	21.206
320	0.915	145.677	21.634
330	0.951	157.366	21.969
340	0.978	166.428	22.212
350	0.994	171.918	22.353

*Preliminary, subject to final design and review.*



**ELEVATION PATTERN**

Type:	ALP24M3		Channel:	30
Directivity:	Numeric	dBd	Location:	
Main Lobe:	25.21	14.02	Beam Tilt:	-0.75
Horizontal:	13.29	11.23	Polarization:	Horizontal



*Preliminary, subject to final design and review.*

## TABULATED DATA FOR ELEVATION PATTERN

Type: ALP24M3

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
5.00	0.189	-14.47	-6.75	0.129	-17.79	-27.00	0.013	-37.72	-50.50	0.014	-37.08	-74.00	0.021	-33.56
4.75	0.162	-15.81	-7.00	0.127	-17.92	-27.50	0.006	-44.44	-51.00	0.010	-40.00	-74.50	0.028	-31.06
4.50	0.109	-19.25	-7.25	0.101	-19.91	-28.00	0.014	-37.08	-51.50	0.007	-43.10	-75.00	0.035	-29.12
4.25	0.045	-26.84	-7.50	0.061	-24.29	-28.50	0.011	-39.17	-52.00	0.016	-35.92	-75.50	0.040	-27.96
4.00	0.055	-25.19	-7.75	0.032	-30.03	-29.00	0.004	-47.96	-52.50	0.025	-32.04	-76.00	0.042	-27.54
3.75	0.118	-18.53	-8.00	0.056	-25.04	-29.50	0.002	-53.98	-53.00	0.029	-30.75	-76.50	0.043	-27.33
3.50	0.164	-15.70	-8.25	0.090	-20.87	-30.00	0.000	-40.00	-53.50	0.025	-32.04	-77.00	0.041	-27.74
3.25	0.178	-14.97	-8.50	0.109	-19.25	-30.50	0.004	-47.96	-54.00	0.015	-36.48	-77.50	0.039	-28.18
3.00	0.161	-15.86	-8.75	0.108	-19.33	-31.00	0.007	-43.10	-54.50	0.006	-44.44	-78.00	0.035	-29.12
2.75	0.112	-19.02	-9.00	0.094	-20.54	-31.50	0.021	-33.56	-55.00	0.020	-33.98	-78.50	0.031	-30.17
2.50	0.054	-25.35	-9.25	0.089	-20.96	-32.00	0.049	-26.20	-55.50	0.032	-29.90	-79.00	0.026	-31.70
2.25	0.075	-22.50	-9.50	0.117	-18.64	-32.50	0.082	-21.72	-56.00	0.038	-28.40	-79.50	0.021	-33.56
2.00	0.143	-16.89	-9.75	0.170	-15.37	-33.00	0.106	-19.49	-56.50	0.034	-29.37	-80.00	0.017	-35.39
1.75	0.194	-14.27	-10.00	0.227	-12.88	-33.50	0.109	-19.25	-57.00	0.022	-33.15	-80.50	0.012	-38.42
1.50	0.213	-13.43	-10.50	0.302	-10.40	-34.00	0.088	-21.11	-57.50	0.011	-39.17	-81.00	0.009	-40.92
1.25	0.200	-13.98	-11.00	0.294	-10.63	-34.50	0.049	-26.20	-58.00	0.024	-32.40	-81.50	0.006	-44.44
1.00	0.188	-14.52	-11.50	0.213	-13.43	-35.00	0.024	-32.40	-58.50	0.041	-27.74	-82.00	0.004	-47.96
0.75	0.246	-12.16	-12.00	0.106	-19.49	-35.50	0.045	-26.94	-59.00	0.051	-25.85	-82.50	0.004	-47.96
0.50	0.381	-8.38	-12.50	0.029	-30.75	-36.00	0.056	-25.04	-59.50	0.053	-25.51	-83.00	0.005	-46.02
0.25	0.553	-5.14	-13.00	0.029	-30.75	-36.50	0.044	-27.13	-60.00	0.049	-26.20	-83.50	0.006	-44.44
0.00	0.726	-2.78	-13.50	0.024	-32.40	-37.00	0.019	-34.42	-60.50	0.053	-25.51	-84.00	0.007	-43.10
-0.25	0.870	-1.21	-14.00	0.008	-41.94	-37.50	0.024	-32.40	-61.00	0.079	-22.05	-84.50	0.008	-41.94
-0.50	0.968	-0.28	-14.50	0.000	-40.00	-38.00	0.042	-27.54	-61.50	0.120	-18.42	-85.00	0.008	-41.94
-0.75	1.000	0.00	-15.00	0.007	-43.10	-38.50	0.043	-27.33	-62.00	0.166	-15.60	-85.50	0.008	-41.94
-1.00	0.966	-0.30	-15.50	0.016	-35.92	-39.00	0.027	-31.37	-62.50	0.210	-13.56	-86.00	0.007	-43.10
-1.25	0.865	-1.26	-16.00	0.013	-37.72	-39.50	0.007	-43.10	-63.00	0.245	-12.22	-86.50	0.007	-43.10
-1.50	0.712	-2.95	-16.50	0.007	-43.10	-40.00	0.024	-32.40	-63.50	0.269	-11.40	-87.00	0.006	-44.44
-1.75	0.525	-5.60	-17.00	0.026	-31.70	-40.50	0.035	-29.12	-64.00	0.278	-11.12	-87.50	0.005	-46.02
-2.00	0.332	-9.58	-17.50	0.031	-30.17	-41.00	0.031	-30.17	-64.50	0.271	-11.34	-88.00	0.004	-47.96
-2.25	0.182	-14.77	-18.00	0.015	-36.48	-41.50	0.015	-36.48	-65.00	0.251	-12.01	-88.50	0.003	-50.46
-2.50	0.163	-15.76	-18.50	0.024	-32.40	-42.00	0.012	-38.42	-65.50	0.220	-13.15	-89.00	0.002	-53.98
-2.75	0.237	-12.49	-19.00	0.046	-26.74	-42.50	0.027	-31.37	-66.00	0.181	-14.85	-89.50	0.001	-60.00
-3.00	0.290	-10.75	-19.50	0.045	-26.94	-43.00	0.032	-29.90	-66.50	0.137	-17.27	-90.00	0.000	-40.00
-3.25	0.294	-10.63	-20.00	0.063	-24.01	-43.50	0.027	-31.37	-67.00	0.094	-20.54			
-3.50	0.254	-11.90	-20.50	0.137	-17.27	-44.00	0.029	-30.75	-67.50	0.059	-24.58			
-3.75	0.181	-14.82	-21.00	0.212	-13.47	-44.50	0.048	-26.38	-68.00	0.041	-27.74			
-4.00	0.100	-20.00	-21.50	0.246	-12.18	-45.00	0.068	-23.35	-68.50	0.050	-26.02			
-4.25	0.074	-22.62	-22.00	0.223	-13.03	-45.50	0.078	-22.16	-69.00	0.065	-23.74			
-4.50	0.125	-18.06	-22.50	0.151	-16.42	-46.00	0.074	-22.62	-69.50	0.076	-22.38			
-4.75	0.173	-15.24	-23.00	0.065	-23.74	-46.50	0.060	-24.44	-70.00	0.081	-21.83			
-5.00	0.192	-14.33	-23.50	0.041	-27.74	-47.00	0.040	-27.96	-70.50	0.079	-22.05			
-5.25	0.178	-14.99	-24.00	0.066	-23.61	-47.50	0.020	-33.98	-71.00	0.072	-22.85			
-5.50	0.137	-17.27	-24.50	0.057	-24.88	-48.00	0.006	-44.44	-71.50	0.061	-24.29			
-5.75	0.077	-22.21	-25.00	0.026	-31.70	-48.50	0.000	-40.00	-72.00	0.048	-26.38			
-6.00	0.027	-31.37	-25.50	0.019	-34.42	-49.00	0.003	-50.46	-72.50	0.034	-29.37			
-6.25	0.063	-24.01	-26.00	0.034	-29.37	-49.50	0.008	-41.94	-73.00	0.022	-33.15			
-6.50	0.107	-19.41	-26.50	0.030	-30.46	-50.00	0.013	-37.72	-73.50	0.017	-35.39			

Preliminary, subject to final design and review.

TABLE I  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WEIU-TV, CHARLESTON, ILLINOIS  
CHANNEL 30 174 KW DA ERP 141 METERS HAAT  
JUNE 2017

<u>Radial</u> <u>Bearing</u> (N ° E, T)	<u>Average*</u> <u>Elevation</u> <u>3.2 to 16.1 km</u>	<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 Contour F(50/90)</u>	
	meters				<u>48 dBu</u> <u>City Grade</u> km	<u>40.325 dBu</u> <u>Noise-Limited</u> km
0	203.9	142.3	0.330	64.328	56.5	64.8
10	204.0	142.2	0.330	63.052	56.4	64.7
20	204.0	142.2	0.330	64.536	56.5	64.8
30	204.1	142.1	0.330	69.279	56.9	65.1
40	204.1	142.1	0.330	77.643	57.4	65.7
50	204.5	141.7	0.330	88.961	58.0	66.3
60	205.2	141.0	0.329	102.353	58.6	67.0
70	205.9	140.3	0.328	117.004	59.1	67.6
80	206.6	139.6	0.327	132.008	59.6	68.1
90	207.3	138.9	0.327	145.680	60.1	68.5
100	206.3	139.9	0.328	157.362	60.5	69.0
110	205.4	140.8	0.329	166.418	60.8	69.4
120	204.5	141.7	0.330	171.910	61.0	69.6
130	203.6	142.6	0.331	174.000	61.2	69.7
140	204.3	141.9	0.330	171.910	61.1	69.6
150	206.6	139.6	0.327	166.418	60.7	69.3
160	209.0	137.2	0.324	157.362	60.3	68.8
170	211.4	134.8	0.322	145.680	59.7	68.2
180	213.7	132.5	0.319	132.008	59.1	67.5
190	213.7	132.5	0.319	117.004	58.6	66.9
200	213.7	132.5	0.319	102.353	58.0	66.2
210	213.6	132.6	0.319	88.961	57.3	65.6
220	213.6	132.6	0.319	77.643	56.7	64.9
230	212.0	134.2	0.321	69.279	56.3	64.5
240	208.9	137.3	0.325	64.536	56.2	64.4
250	205.8	140.4	0.328	63.052	56.3	64.5
260	202.7	143.5	0.332	64.328	56.6	64.9
270	199.6	146.6	0.335	67.531	57.1	65.4

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COMPUTED COVERAGE DATA  
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WEIU-TV, CHARLESTON, ILLINOIS  
CHANNEL 30 174 KW DA ERP 141 METERS HAAT  
JUNE 2017

<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 Contour F(50/90)</u>	
					<u>48 dBu</u> <u>City Grade</u> km	<u>40.325 dBu</u> <u>Noise-Limited</u> km
280	199.6	146.6	0.335	71.713	57.3	65.7
290	199.6	146.6	0.335	75.561	57.6	65.9
300	199.5	146.7	0.335	78.578	57.8	66.1
310	199.5	146.7	0.335	79.506	57.8	66.2
320	200.0	146.2	0.335	78.578	57.7	66.1
330	201.0	145.2	0.334	75.561	57.5	65.8
340	201.9	144.3	0.333	71.713	57.2	65.5
350	202.9	143.3	0.332	67.531	56.8	65.1

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

DTV Channel 30 (566-572 MHz)  
Average Elevation 3.2 to 16.1 km 205.6 meters AMSL  
Center of Radiation 346.2 meters AMSL  
Antenna Height Above Average Terrain 141 meters  
Effective Radiated Power 174 kW (22.4 dBk) Max.

North Latitude: 39° 44' 15"  
West Longitude: 88° 18' 25.5"

(NAD-27)

