

ENGINEERING STATEMENT  
RE APPLICATION IN SUPPORT OF CONSTRUCTION PERMIT  
FOR REPACKED FACILITIES PURSUANT TO DA 17-314  
**WVIR-TV, CHARLOTTESVILLE, VIRGINIA**  
CHANNEL 2 5.47 KW ERP MAX 367.9 METERS HAAT

JUNE 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         )

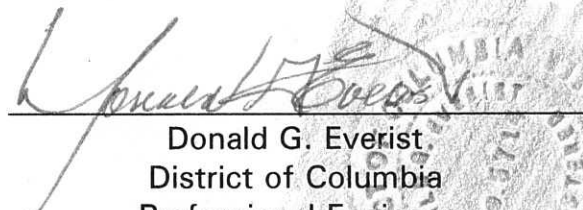
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

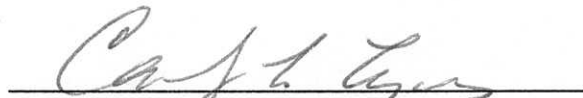
That the attached engineering report was prepared by him or under his supervision and direction and

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 30<sup>th</sup> day of June, 2017.



  
Notary Public

My Commission Expires: 2/28/2018

This engineering statement has been prepared on behalf of Virginia Broadcasting Corporation, licensee of TV Station WVIR-TV, Charlottesville, Virginia, in support of its application for a construction permit to operate on Channel 2 as authorized by the Incentive Auction for repacked facilities pursuant to DA 17-314.

Station WVIR-TV is currently licensed to operate on Channel 32 (578-584 MHz) for its digital TV operation with 1000 kW maximum effective radiated power ("ERP") at 367.9 meters height above average terrain ("HAAT").

#### Antenna Site

It is proposed to top-mount the Channel 2 DTV antenna on the existing WVIR-DT self-supporting tower (see Exhibit E-1). The tower registration is 1243302.

The WVIR-TV antenna site is located on the Carters Mountain Orchard, east of Route 20, approximately 5.6 km (3.5 miles) south of Charlottesville, Virginia.

The geographic coordinates of the existing tower are as follows:

North Latitude: 37° 59' 02"

West Longitude: 78° 28' 53"

NAD-27

North Latitude: 37° 59' 03"

West Longitude: 78° 28' 52"

NAD-83

Equipment Data

Antenna: Alive Tele, Model No. ATC-BPC203-V or equivalent with zero degree electrical beam tilt. The horizontal pattern is a composite pattern derived from WVIR-DT's current UHF pattern. The vertical plane pattern and other exhibits required by Section 73.625(c) are herein included as Exhibits E-2

Transmission Line: 91.4 meters (300 ft) of Dielectric, Type EIA/DCA, 6-1/8" 75 ohm or equivalent with total loss of 0.10 dB

Elevation Data

Elevation of the site above mean sea level	448.4 meters (1471 feet)
Elevation of the top of structure including antenna above ground	95.7 meters (314 feet)
Elevation of the top of supporting structure above mean sea level	544 meters (1784.8 feet)
Height of DTV antenna radiation center above ground	87.3 meters (286.5 feet)
Height of DTV antenna radiation center above mean sea level	535.7 meters (1757.5 feet)
Height of DTV antenna radiation center above average terrain	367.9 meters (1207 feet)

Topographic Data

The average HAAT from the eight cardinal radials from 3.2 to 16.1 kilometers have been previously determined.

### 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) 35 dBu and 28 dBu F(50,90) contours, the effective radiated power and the effective antenna heights. The predicted 35 dBu and 28 dBu contours determined from these distances are shown on the attached map (Exhibit E-3).

Exhibit E-4 reflects the proposed coverage contour in relation to that licensed.

The distances along each radial to the limits of F(50,90) 35 dBu and 28 dBu F(50,90) contours were determined from reference to the appropriate propagation data for Channels 2-6, as published by the Commission in Section 73.699 of its rules.

### Environmental Statement

The proposed WVIR-TV antenna will replace the current Channel 32 antenna and will be top-mounted on the existing self-supporting tower.

An evaluation has been made to determine compliance with the Commission's specified standards for human exposure to RF fields as set forth in the OET Bulletin No. 65 dated August 1997. For a maximum effective radiated power of 5.47 kW and a radiation center of 87.3 meters above ground level, the proposed DTV operation would have a maximum of 2.23 microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ) radio frequency field levels ("RFF") at 2 meters above the base of the

tower, based on an antenna field factor of 0.144 in the downward direction 80 to 90 degrees (see Exhibit E-2). The Commission's guidelines for Channel 2 TV operation are  $1000 \mu\text{W}/\text{cm}^2$  for the occupational/controlled and  $200 \mu\text{W}/\text{cm}^2$  for the general population/ uncontrolled environment.

There are multiple emitters utilizing the Carter's Mountain antenna farm. However, those television operations within 100 meters will be changing their facilities due to the repack therefore, the RFF study will not consider those stations and addresses only WVIR-TV.

The RFF contribution by WVIR-TV 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

**WVIR-TV DTV Facility** (based on the numbers in this application)

Channel 2	Freq:	56 + 62 MHz Range
	ERP =	10.94 kW (H&V)
	Polarization =	Circular
	RCAGL -2 meters =	85.95 meters

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

Total ERP = 10940 watts (Circular)

R = 85.3 meters

F = 0.144 (from elevation data)

$S = < 2.23 \mu\text{W}/\text{cm}^2$  (2 meters above ground)

Therefore, WVIR-TV contributes less than  $2.23 \mu\text{W}/\text{cm}^2$  at 2 meters above ground.

The limit for an uncontrolled environment (general population) for this frequency is 200  $\mu\text{W}/\text{cm}^2$ .

WVIR-TV contributes less than two percent RFF level for an uncontrolled environment (general population) two meters above the ground.

Therefore, the RFF percentage will be less than two percent of the limit for an uncontrolled environment at two meters above ground. Based on this analysis, RFF levels will not exceed current FCC guidelines.

Therefore, members of the public and personnel working around the proposed WVIR-DT, Channel 2 DTV facility would not be exposed to RFF exceeding the Commission's guidelines. With respect to work performed on the tower, Station WVIR-TV will establish procedure to ensure that workers are not exposed to RFF levels above the Commission's guidelines, by reducing or turning off the power, as appropriate.

FCC Rule, Section 1.1307

An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations because the tower structure is existing and will not be modified so as to invoke the need for environmental analysis. The existing tower is registered with the FCC, and approved by the FAA, and neither the ASR nor FAA approval will require modification. It was not constructed during 2001-2005 and thus is not a "twilight tower."

While some structural reinforcement of the tower will be required to support additional weight, there will be no material change in visual appearance, since one antenna is being substituted

for another with no increase in overall structure height, including the height of the top-mounted antenna.

Compliance with OET Bulletin No. 65 (non-ionizing radiation) is discussed in the previous section of this exhibit.



ABOVE MEAN SEA LEVEL

ABOVE GROUND

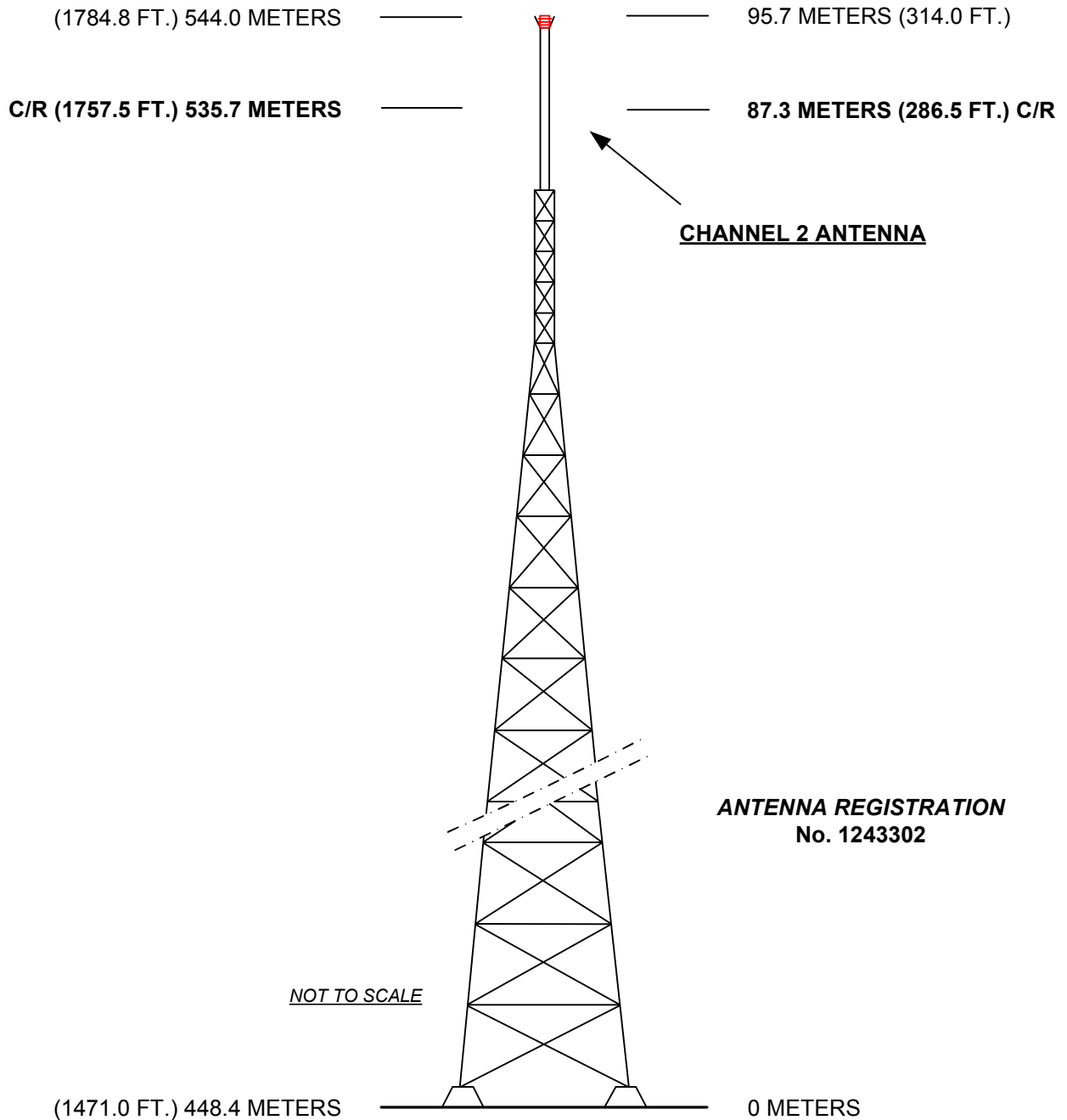


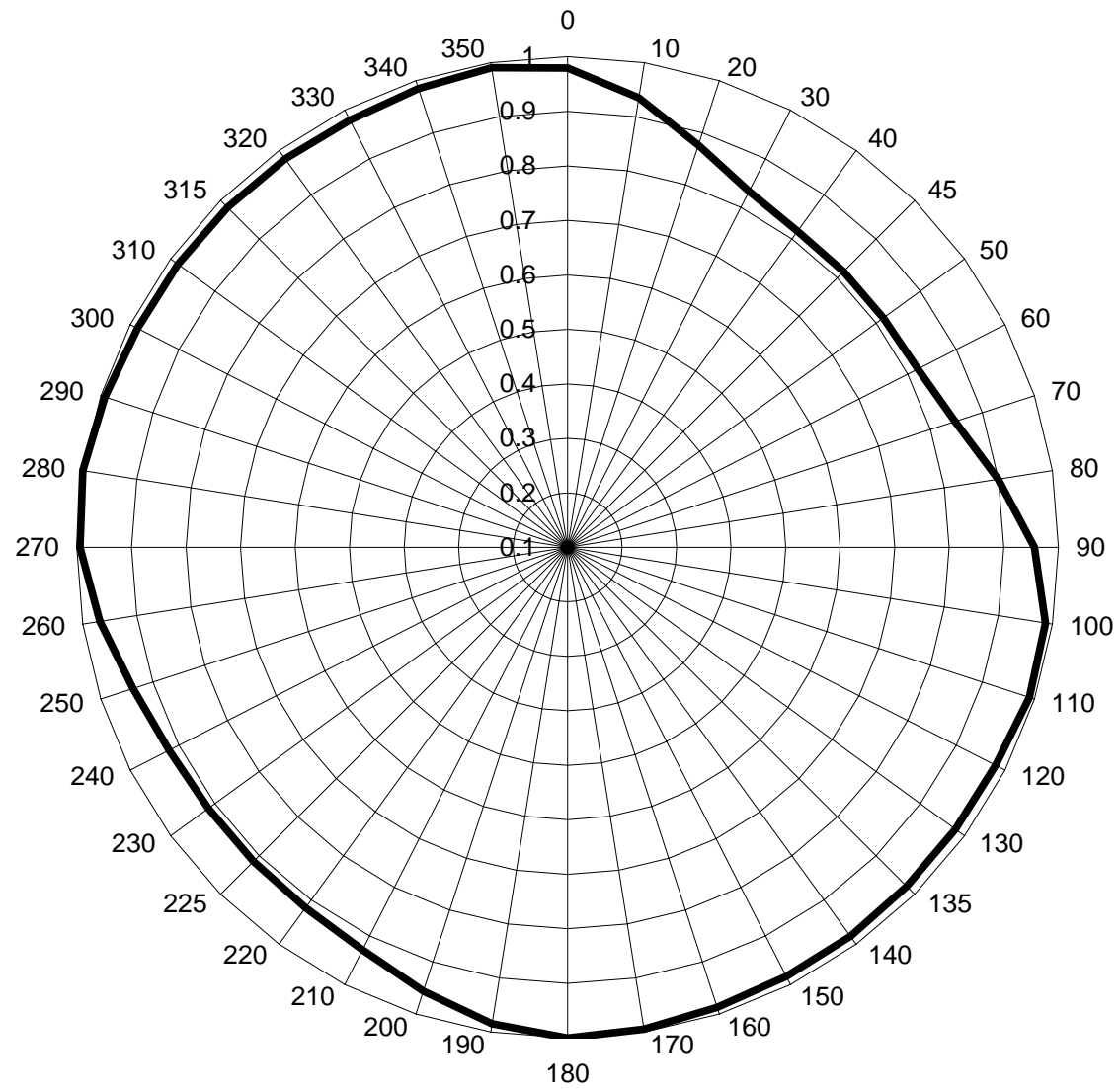
EXHIBIT E-1  
VERTICAL SKETCH  
FOR THE REPACKING OPERATION OF  
**WVIR-TV, CHARLOTTESVILLE, VIRGINIA**  
CHANNEL 2 5.47 kW 367.9 METERS HAAT  
JUNE 2017

Cohen, Dippell and Everist, P.C. Consulting Engineers Washington, D.C.

EXHIBIT E-2

ANTENNA MANUFACTURER DATA

COHEN, DIPPELL AND EVERIST, P.C.



COMPOSITE PATTERN  
WVIR-TV, CHARLOTTESVILLE, VIRGINIA  
CHANNEL 2 5.47 KW 367.9 METERS HAAT  
JUNE 2017

COHEN, DIPPELL AND EVERIST, P.C.

TABLE  
FIELD RATIOS  
FOR CHANNEL 2 COMPOSITE PATTERN  
WVIR-TV, CHARLOTTESVILLE, VIRGINIA  
JUNE 2017

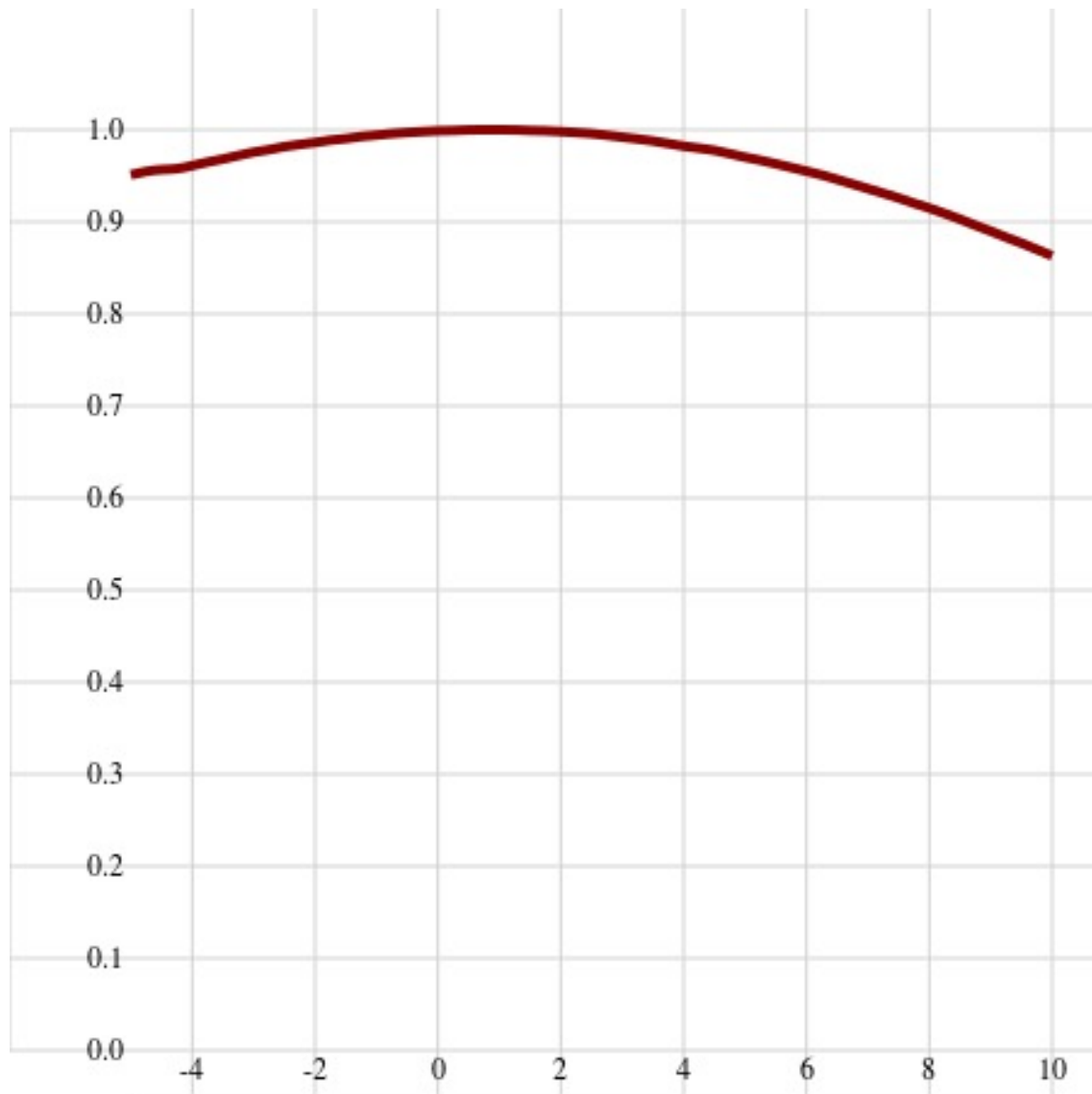
<u>AZIMUTH</u>	<u>FIELD</u>	<u>AZIMUTH</u>	<u>FIELD</u>
<u>DEG</u>		<u>DEG</u>	
0	0.979	180	1.000
10	0.935	190	0.985
20	0.876	200	0.956
30	0.833	210	0.929
40	0.817	220	0.917
45	0.816	225	0.915
50	0.816	230	0.915
60	0.821	240	0.92
70	0.847	250	0.938
80	0.899	260	0.968
90	0.956	270	0.994
100	0.987	280	1.000
110	0.99	290	0.992
120	0.981	300	0.985
130	0.979	310	0.983
135	0.98	315	0.982
140	0.982	320	0.981
150	0.983	330	0.979
160	0.987	340	0.985
170	0.995	350	0.991



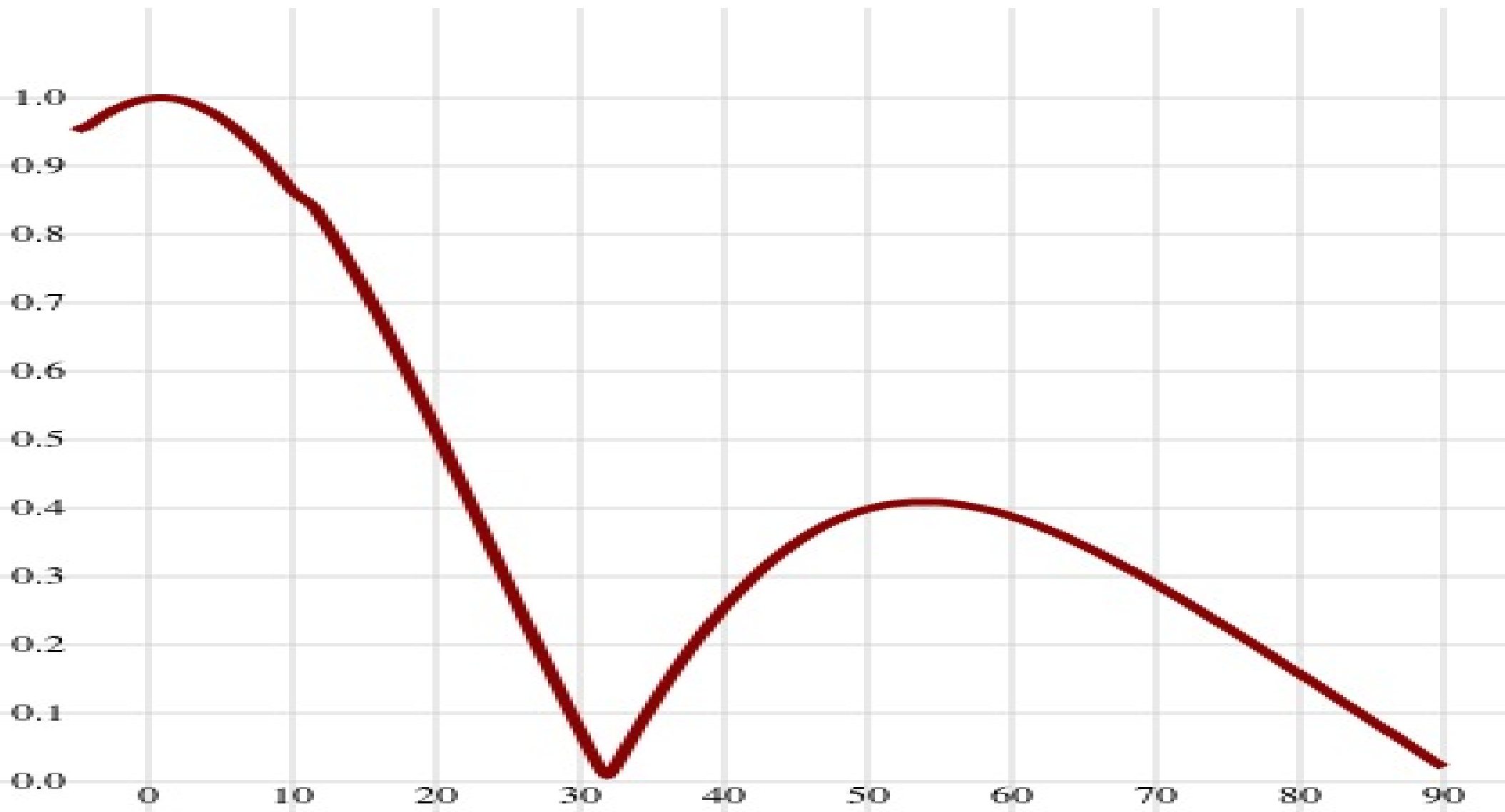
## Summary

Antenna Specifications	
Antenna Type	Panel
Antenna Model	ATC-BPC2O3-V
Electrical Specifications	
Channel(s)	2
Frequency Range (MHz)	56-62
Polarization	Elliptical/Circular
Horizontal Azimuth Pattern	O3
Directivity	1.20
dB	0.79
Vertical Azimuth Pattern	V-Omni
Directivity	1.20
dB	0.79
Vertical Component	100 %
Azimuth Peak of Beam	0 °
Elevation Pattern	2P
Directivity	2.00
dB	3.01
Electrical Beam Tilt	0.00 °
Antenna Peak Power Gain	
Horizontal Gain Power	1.20
Horizontal Gain Ratio	0.79 dBd
Vertical Gain Power	1.20
Vertical Gain Ratio	0.79 dBd
Line Type	3-1/8" 50 Ohm Rigid Line
Line Length	335 ft
Total Line Loss	0.23 dB
Effective Radiated Power (ERP)	5.47 kW
ERP Vertical Power	5.47 kW
Transmitter Power Output (TPO)	
TPO Power	5.02 kW
TPO Ratio	7.01 dBk
Input Type	EIA 3-1/8"
Mechanical Specifications	
Mount Type	Top Mount
Length of Antenna	32ft
Center of Radiation	16 ft
Radome Diameter	N/A
Color	Aviation Orange
Calculated Weight	Contact Alive Telecom 1 2
Windload (Shear)	Contact Alive Telecom 1 2

## Elevation pattern -5 to 10



## Elevation pattern -5 to 90



## Azimuth Horizontal Pattern Tabulation

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0°	inf	90°	0.844	-1.47	180°	0.883	-1.08	270°	0.844	-1.47	
2°	0.999	-0.01	92°	0.863	-1.28	182°	0.881	-1.10	272°	0.827	-1.65
4°	0.997	-0.03	94°	0.882	-1.09	184°	0.877	-1.14	274°	0.814	-1.79
6°	0.994	-0.05	96°	0.899	-0.92	186°	0.870	-1.21	276°	0.806	-1.87
8°	0.988	-0.10	98°	0.915	-0.77	188°	0.861	-1.30	278°	0.803	-1.91
10°	0.982	-0.16	100°	0.929	-0.64	190°	0.850	-1.41	280°	0.804	-1.89
12°	0.974	-0.23	102°	0.942	-0.52	192°	0.839	-1.52	282°	0.810	-1.83
14°	0.965	-0.31	104°	0.954	-0.41	194°	0.828	-1.64	284°	0.818	-1.74
16°	0.954	-0.41	106°	0.965	-0.31	196°	0.818	-1.74	286°	0.828	-1.64
18°	0.942	-0.52	108°	0.974	-0.23	198°	0.810	-1.83	288°	0.839	-1.52
20°	0.929	-0.64	110°	0.982	-0.16	200°	0.804	-1.89	290°	0.850	-1.41
22°	0.915	-0.77	112°	0.988	-0.10	202°	0.803	-1.91	292°	0.861	-1.30
24°	0.899	-0.92	114°	0.994	-0.05	204°	0.806	-1.87	294°	0.870	-1.21
26°	0.882	-1.09	116°	0.997	-0.03	206°	0.814	-1.79	296°	0.877	-1.14
28°	0.863	-1.28	118°	0.999	-0.01	208°	0.827	-1.65	298°	0.881	-1.10
30°	0.844	-1.47	120°	1.000	0.00	210°	0.844	-1.47	300°	0.883	-1.08
32°	0.827	-1.65	122°	0.999	-0.01	212°	0.863	-1.28	302°	0.881	-1.10
34°	0.814	-1.79	124°	0.997	-0.03	214°	0.882	-1.09	304°	0.877	-1.14
36°	0.806	-1.87	126°	0.994	-0.05	216°	0.899	-0.92	306°	0.870	-1.21
38°	0.803	-1.91	128°	0.988	-0.10	218°	0.915	-0.77	308°	0.861	-1.30
40°	0.804	-1.89	130°	0.982	-0.16	220°	0.929	-0.64	310°	0.850	-1.41
42°	0.810	-1.83	132°	0.974	-0.23	222°	0.942	-0.52	312°	0.839	-1.52
44°	0.818	-1.74	134°	0.965	-0.31	224°	0.954	-0.41	314°	0.828	-1.64
46°	0.828	-1.64	136°	0.954	-0.41	226°	0.965	-0.31	316°	0.818	-1.74
48°	0.839	-1.52	138°	0.942	-0.52	228°	0.974	-0.23	318°	0.810	-1.83
50°	0.850	-1.41	140°	0.929	-0.64	230°	0.982	-0.16	320°	0.804	-1.89
52°	0.861	-1.30	142°	0.915	-0.77	232°	0.988	-0.10	322°	0.803	-1.91
54°	0.870	-1.21	144°	0.899	-0.92	234°	0.994	-0.05	324°	0.806	-1.87
56°	0.877	-1.14	146°	0.882	-1.09	236°	0.997	-0.03	326°	0.814	-1.79
58°	0.881	-1.10	148°	0.863	-1.28	238°	0.999	-0.01	328°	0.827	-1.65
60°	0.883	-1.08	150°	0.844	-1.47	240°	1.000	0.00	330°	0.844	-1.47
62°	0.881	-1.10	152°	0.827	-1.65	242°	0.999	-0.01	332°	0.863	-1.28
64°	0.877	-1.14	154°	0.814	-1.79	244°	0.997	-0.03	334°	0.882	-1.09
66°	0.870	-1.21	156°	0.806	-1.87	246°	0.994	-0.05	336°	0.899	-0.92
68°	0.861	-1.30	158°	0.803	-1.91	248°	0.988	-0.10	338°	0.915	-0.77
70°	0.850	-1.41	160°	0.804	-1.89	250°	0.982	-0.16	340°	0.929	-0.64
72°	0.839	-1.52	162°	0.810	-1.83	252°	0.974	-0.23	342°	0.942	-0.52
74°	0.828	-1.64	164°	0.818	-1.74	254°	0.965	-0.31	344°	0.954	-0.41
76°	0.818	-1.74	166°	0.828	-1.64	256°	0.954	-0.41	346°	0.965	-0.31
78°	0.810	-1.83	168°	0.839	-1.52	258°	0.942	-0.52	348°	0.974	-0.23
80°	0.804	-1.89	170°	0.850	-1.41	260°	0.929	-0.64	350°	0.982	-0.16
82°	0.803	-1.91	172°	0.861	-1.30	262°	0.915	-0.77	352°	0.988	-0.10
84°	0.806	-1.87	174°	0.870	-1.21	264°	0.899	-0.92	354°	0.994	-0.05
86°	0.814	-1.79	176°	0.877	-1.14	266°	0.882	-1.09	356°	0.997	-0.03
88°	0.827	-1.65	178°	0.881	-1.10	268°	0.863	-1.28	358°	0.999	-0.01





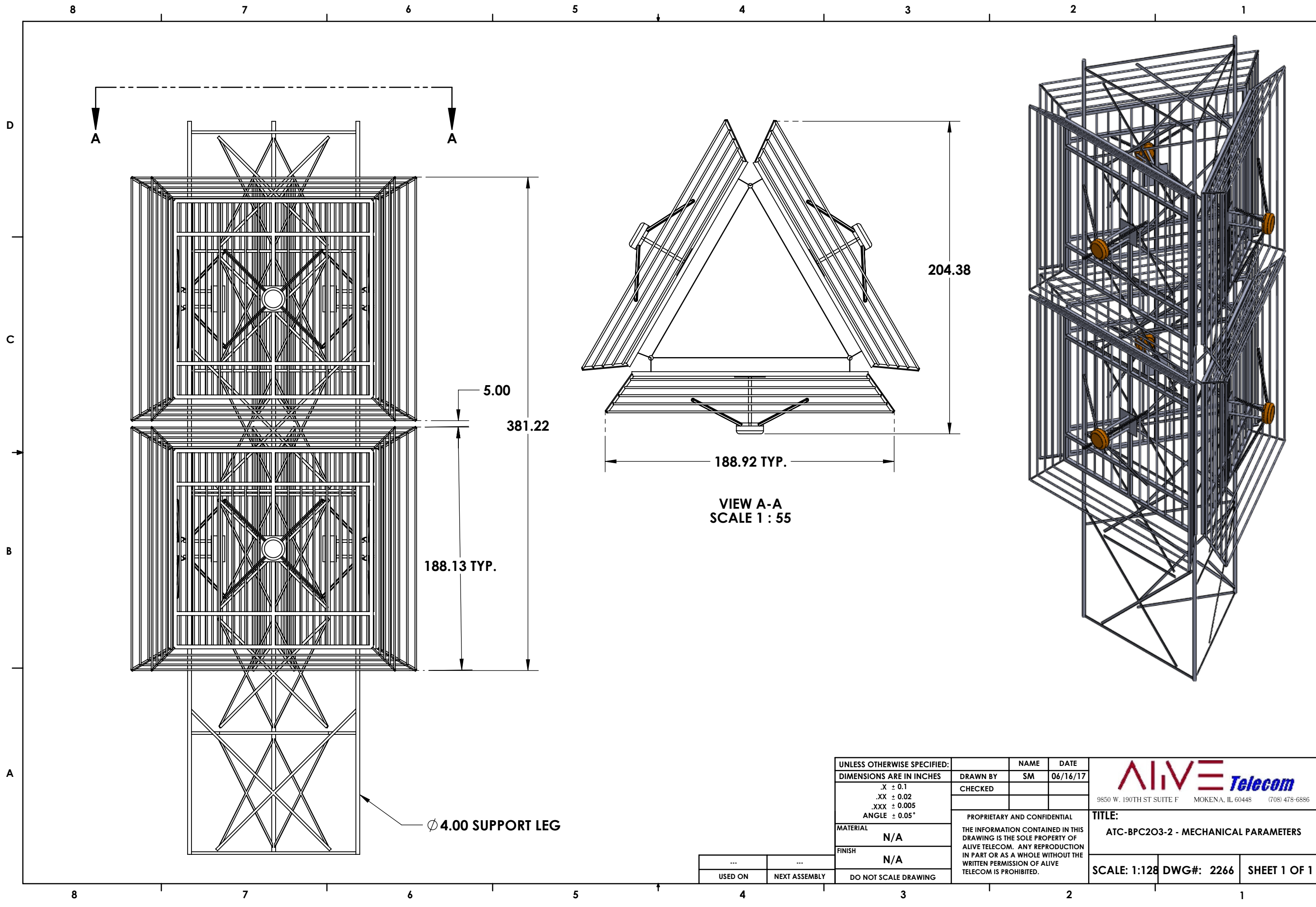
Azimuth Pattern Tabulation, FCC

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
0°	inf	90°	0.844	-1.47	180°	0.883	-1.08	270°	0.844	-1.47	
10°	0.982	-0.16	100°	0.929	-0.64	190°	0.850	-1.41	280°	0.804	-1.89
20°	0.929	-0.64	110°	0.982	-0.16	200°	0.804	-1.89	290°	0.850	-1.41
30°	0.844	-1.47	120°	1.000	0.00	210°	0.844	-1.47	300°	0.883	-1.08
40°	0.804	-1.89	130°	0.982	-0.16	220°	0.929	-0.64	310°	0.850	-1.41
50°	0.850	-1.41	140°	0.929	-0.64	230°	0.982	-0.16	320°	0.804	-1.89
60°	0.883	-1.08	150°	0.844	-1.47	240°	1.000	0.00	330°	0.844	-1.47
70°	0.850	-1.41	160°	0.804	-1.89	250°	0.982	-0.16	340°	0.929	-0.64
80°	0.804	-1.89	170°	0.850	-1.41	260°	0.929	-0.64	350°	0.982	-0.16

# Elevation Pattern Tabulation

-5 to 10 in 0.25 increments, 10 to 90 in 0.50 increments

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-5.00	0.951	-0.44	8.75	0.896	-0.95	35.00	0.112	-19.02	62.50	0.368	-8.68
-4.75	0.955	-0.40	9.00	0.890	-1.01	35.50	0.128	-17.86	63.00	0.364	-8.78
-4.50	0.957	-0.38	9.25	0.883	-1.08	36.00	0.144	-16.83	63.50	0.360	-8.87
-4.25	0.957	-0.38	9.50	0.877	-1.14	36.50	0.160	-15.92	64.00	0.355	-9.00
-4.00	0.961	-0.35	9.75	0.870	-1.21	37.00	0.175	-15.14	64.50	0.350	-9.12
-3.75	0.965	-0.31	10.00	0.863	-1.28	37.50	0.189	-14.47	65.00	0.345	-9.24
-3.50	0.968	-0.28	10.50	0.855	-1.36	38.00	0.203	-13.85	65.50	0.340	-9.37
-3.25	0.972	-0.25	11.00	0.849	-1.42	38.50	0.217	-13.27	66.00	0.335	-9.50
-3.00	0.976	-0.21	11.50	0.841	-1.50	39.00	0.230	-12.77	66.50	0.329	-9.66
-2.75	0.978	-0.19	12.00	0.825	-1.67	39.50	0.242	-12.32	67.00	0.324	-9.79
-2.50	0.982	-0.16	12.50	0.809	-1.84	40.00	0.255	-11.87	67.50	0.318	-9.95
-2.25	0.984	-0.14	13.00	0.792	-2.03	40.50	0.266	-11.50	68.00	0.312	-10.12
-2.00	0.986	-0.12	13.50	0.775	-2.21	41.00	0.277	-11.15	68.50	0.307	-10.26
-1.75	0.989	-0.10	14.00	0.757	-2.42	41.50	0.288	-10.81	69.00	0.301	-10.43
-1.50	0.990	-0.09	14.50	0.739	-2.63	42.00	0.298	-10.52	69.50	0.295	-10.60
-1.25	0.993	-0.06	15.00	0.720	-2.85	42.50	0.308	-10.23	70.00	0.289	-10.78
-1.00	0.994	-0.05	15.50	0.701	-3.09	43.00	0.317	-9.98	70.50	0.282	-11.00
-0.75	0.996	-0.03	16.00	0.681	-3.34	43.50	0.326	-9.74	71.00	0.276	-11.18
-0.50	0.997	-0.03	16.50	0.661	-3.60	44.00	0.334	-9.53	71.50	0.270	-11.37
-0.25	0.998	-0.02	17.00	0.641	-3.86	44.50	0.342	-9.32	72.00	0.264	-11.57
0.00	0.999	-0.01	17.50	0.620	-4.15	45.00	0.350	-9.12	72.50	0.257	-11.80
0.25	0.999	-0.01	18.00	0.599	-4.45	45.50	0.357	-8.95	73.00	0.251	-12.01
0.50	1.000	0.00	18.50	0.578	-4.76	46.00	0.363	-8.80	73.50	0.244	-12.25
0.75	1.000	0.00	19.00	0.556	-5.10	46.50	0.369	-8.66	74.00	0.238	-12.47
1.00	1.000	0.00	19.50	0.535	-5.43	47.00	0.375	-8.52	74.50	0.231	-12.73
1.25	1.000	0.00	20.00	0.513	-5.80	47.50	0.380	-8.40	75.00	0.225	-12.96
1.50	0.999	-0.01	20.50	0.491	-6.18	48.00	0.384	-8.31	75.50	0.218	-13.23
1.75	0.999	-0.01	21.00	0.468	-6.60	48.50	0.389	-8.20	76.00	0.211	-13.51
2.00	0.998	-0.02	21.50	0.446	-7.01	49.00	0.392	-8.13	76.50	0.205	-13.76
2.25	0.997	-0.03	22.00	0.424	-7.45	49.50	0.396	-8.05	77.00	0.198	-14.07
2.50	0.996	-0.03	22.50	0.401	-7.94	50.00	0.399	-7.98	77.50	0.191	-14.38
2.75	0.994	-0.05	23.00	0.379	-8.43	50.50	0.401	-7.94	78.00	0.185	-14.66
3.00	0.992	-0.07	23.50	0.356	-8.97	51.00	0.404	-7.87	78.50	0.178	-14.99
3.25	0.990	-0.09	24.00	0.333	-9.55	51.50	0.406	-7.83	79.00	0.171	-15.34
3.50	0.988	-0.10	24.50	0.311	-10.14	52.00	0.407	-7.81	79.50	0.164	-15.70
3.75	0.985	-0.13	25.00	0.289	-10.78	52.50	0.408	-7.79	80.00	0.157	-16.08
4.00	0.982	-0.16	25.50	0.266	-11.50	53.00	0.409	-7.77	80.50	0.151	-16.42
4.25	0.980	-0.18	26.00	0.244	-12.25	53.50	0.409	-7.77	81.00	0.144	-16.83
4.50	0.978	-0.19	26.50	0.222	-13.07	54.00	0.409	-7.77	81.50	0.137	-17.27
4.75	0.974	-0.23	27.00	0.200	-13.98	54.50	0.409	-7.77	82.00	0.130	-17.72
5.00	0.970	-0.26	27.50	0.179	-14.94	55.00	0.409	-7.77	82.50	0.123	-18.20
5.25	0.967	-0.29	28.00	0.157	-16.08	55.50	0.408	-7.79	83.00	0.116	-18.71
5.50	0.963	-0.33	28.50	0.136	-17.33	56.00	0.407	-7.81	83.50	0.110	-19.17
5.75	0.959	-0.36	29.00	0.115	-18.79	56.50	0.405	-7.85	84.00	0.103	-19.74
6.00	0.955	-0.40	29.50	0.094	-20.54	57.00	0.403	-7.89	84.50	0.096	-20.35
6.25	0.951	-0.44	30.00	0.074	-22.62	57.50	0.401	-7.94	85.00	0.089	-21.01
6.50	0.946	-0.48	30.50	0.053	-25.51	58.00	0.399	-7.98	85.50	0.082	-21.72
6.75	0.941	-0.53	31.00	0.034	-29.37	58.50	0.397	-8.02	86.00	0.075	-22.50
7.00	0.936	-0.57	31.50	0.014	-37.08	59.00	0.394	-8.09	86.50	0.069	-23.22
7.25	0.931	-0.62	32.00	0.005	-46.02	59.50	0.391	-8.16	87.00	0.062	-24.15
7.50	0.926	-0.67	32.50	0.024	-32.40	60.00	0.388	-8.22	87.50	0.055	-25.19
7.75	0.920	-0.72	33.00	0.042	-27.54	60.50	0.384	-8.31	88.00	0.048	-26.38
8.00	0.915	-0.77	33.50	0.060	-24.44	61.00	0.381	-8.38	88.50	0.041	-27.74
8.25	0.909	-0.83	34.00	0.078	-22.16	61.50	0.377	-8.47	89.00	0.034	-29.37
8.50	0.903	-0.89	34.50	0.095	-20.45	62.00	0.373	-8.57	89.50	0.027	-31.37
8.75	0.896	-0.95	35.00	0.112	-19.02	62.50	0.368	-8.68	90.00	0.021	-33.56



VIEW A-A  
SCALE 1 : 55

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES		NAME	DATE
.X ± 0.1 .XX ± 0.02 .XXX ± 0.005 ANGLE ± 0.05°		DRAWN BY SM	06/16/17
MATERIAL N/A		CHECKED	
FINISH N/A		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ALIVE TELECOM. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ALIVE TELECOM IS PROHIBITED.	
DO NOT SCALE DRAWING		TITLE: ATC-BPC2O3-2 - MECHANICAL PARAMETERS	
USED ON NEXT ASSEMBLY		SCALE: 1:128	DWG#: 2266 SHEET 1 OF 1



9850 W. 190TH ST SUITE F MOKENA, IL 60448 (708) 478-6886

TABLE I  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WVIR-TV, CHARLOTTESVILLE, VIRGINIA  
CHANNEL 2 5.47 KW ERP 367.9 METERS HAAT  
JUNE 2017

<u>Radial</u> <u>Bearing</u> (N ° E, T)	<u>Average*</u> <u>Elevation</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>	
	<u>3.2 to 16.1 km</u> meters				<u>35 dBu</u> <u>City Grade</u> km	<u>28 dBu</u> <u>Noise-Limited</u> km
0	144.7	391.0	0.548	5.24	91.7	105.1
10	164.1	371.6	0.534	4.78	90.0	103.1
20	183.5	352.2	0.520	4.20	88.1	101.2
30	202.9	332.8	0.505	3.80	86.5	99.7
40	222.4	313.3	0.490	3.65	85.1	98.4
50	219.1	316.6	0.493	3.64	85.2	98.6
60	193.3	342.4	0.513	3.69	86.7	99.8
70	167.4	368.3	0.532	3.93	88.3	101.2
80	141.6	394.1	0.550	4.42	90.6	103.7
90	115.7	420.0	0.568	5.00	92.9	106.5
100	118.6	417.1	0.566	5.33	93.2	106.9
110	121.5	414.2	0.564	5.36	93.1	106.8
120	124.4	411.3	0.562	5.26	92.8	106.4
130	127.2	408.5	0.560	5.24	92.6	106.2
140	129.4	406.3	0.558	5.28	92.6	106.1
150	130.9	404.8	0.557	5.29	92.5	106.0
160	132.4	403.3	0.556	5.33	92.5	106.0
170	133.8	401.9	0.555	5.42	92.5	106.1
180	135.3	400.4	0.554	5.47	92.5	106.1
190	145.1	390.6	0.547	5.31	91.8	105.2
200	154.8	380.9	0.541	5.00	90.8	104.0
210	164.6	371.1	0.534	4.72	89.9	103.0
220	174.4	361.3	0.527	4.60	89.2	102.4
230	183.7	352.0	0.520	4.58	88.8	102.0
240	192.5	343.2	0.513	4.63	88.5	101.8
250	201.4	334.3	0.506	4.81	88.4	101.9
260	210.2	325.5	0.500	5.13	88.5	102.1
270	219.1	316.6	0.493	5.41	88.4	102.2

TABLE I  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WVIR-TV, CHARLOTTESVILLE, VIRGINIA  
CHANNEL 2 5.47 KW ERP 367.9 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>35 dBu</u> <u>City Grade</u> km	<u>28 dBu</u> <u>Noise-Limited</u> km
280	208.5	327.2	0.501	5.47	89.1	102.8
290	197.9	337.8	0.509	5.38	89.4	103.0
300	187.3	348.4	0.517	5.31	89.8	103.2
310	176.7	359.0	0.525	5.29	90.2	103.5
320	168.4	367.3	0.531	5.26	90.5	103.8
330	162.5	373.2	0.535	5.24	90.8	104.0
340	156.6	379.1	0.539	5.31	91.2	104.5
350	150.7	385.1	0.544	5.37	91.6	104.9

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

DTV Channel 2 (54-60 MHz)  
Average Elevation 3.2 to 16.1 km 165.6 meters AMSL  
Center of Radiation 535.7 meters AMSL  
Effective Radiated Power 5.47 kW (7.4 dBk) Max.  
Antenna Height Above Average Terrain 367.9 meters

North Latitude: 37° 59' 02"  
West Longitude: 78° 28' 53"

(NAD-27)



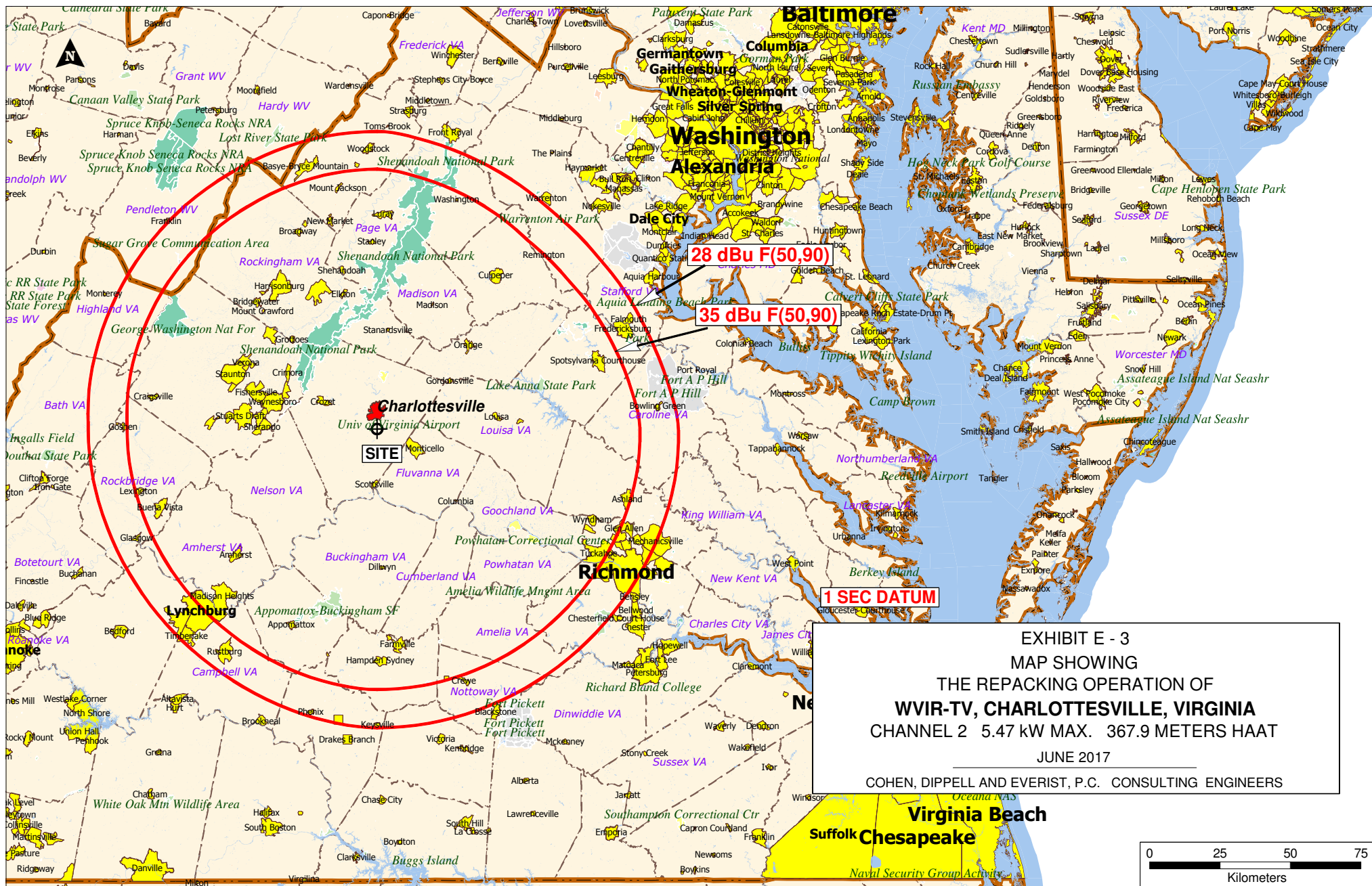


EXHIBIT E - 3  
MAP SHOWING  
THE REPACKING OPERATION OF  
**WVIR-TV, CHARLOTTESVILLE, VIRGINIA**  
CHANNEL 2 5.47 KW MAX. 367.9 METERS HAAT  
JUNE 2017  
COHEN, DIPPELL AND EVERIST, P.C. CONSULTING ENGINEERS

