

ENGINEERING STATEMENT  
RE DTV BROADCAST ENGINEERING DATA  
APPLICATION FOR CONSTRUCTION PERMIT  
AUXILIARY DTV FACILITY  
**WRAL-DT, RALEIGH, NORTH CAROLINA**  
CHANNEL 53 1000 KW MAX-DA ERP 467 METERS HAAT

FEBRUARY 2008

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 )

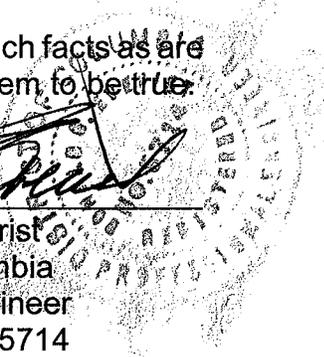
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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

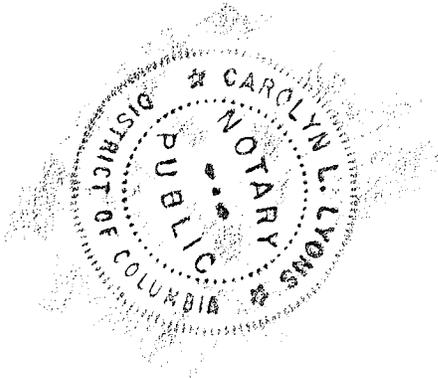
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

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


Subscribed and sworn to before me this 1<sup>st</sup> day of February, 2008.

  
Notary Public

My Commission Expires: 2/28/2008



Introduction

This engineering statement has been prepared on behalf of Capitol Broadcasting Company, Inc., (“Capitol”), licensee of WRAL-DT, Raleigh, North Carolina, and accompanies the request for a construction permit for DTV auxiliary operation.

WRAL-DT is licensed (FCC File No. BLCDT-20000403ABD) to operate on DTV Channel 53 with an effective radiated power (“ERP”) of 1000 kW non-directional and a height above average terrain (“HAAT”) of 629 meters. Capitol proposes to construct an auxiliary DTV operation on channel 53 with 1000 kW maximum directional ERP at 467 meters HAAT.

Tower Information

The DTV auxiliary antenna will be side-mounted at 438.3 meters (1438 feet) on an existing tower which has a total overall structure height above ground of 606.2 meters (1988.8 feet). The existing transmitter site is located at 5033 TV Tower Road, Garner, NC 27529.

The tower registration number of the existing tower is 1027322. Exhibit E-1 is a diagram of the existing tower and proposed auxiliary DTV transmitting antenna.

The geographic coordinates of the existing site are as follows:

North Latitude: 35° 40’ 29”

West Longitude: 78° 31’ 40”

NAD-27

Antenna Data

Antenna Type	ERI, Type ETU-P3H12-(48-53) (or equivalent) with a 0.75° electrical beam tilt. Manufacturer antenna data attached as Exhibit E-2.
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Transmission Line	ERI, MACXLine Rigid Type 7-3/16", 75 ohm
Line Length	499.3 meters (1638 feet)
	Line Loss for Ch 53 (0.102 dB/100 feet)

Power Data

Transmitter Output Power	28.58 kW	14.56 dBk
Combiner Loss	96.6 %	0.15 dB
Total Line Loss	68.1 %	1.67 dB
Antenna Input Power	18.79 kW	12.74 dBk
Antenna Gain (Max)	53.2	17.26 dB
Effective Radiated Power	1000 kW	30.0 dBk

Elevation Data

Vertical dimension of Channel 53 side-mounted antenna	15.8 meters 51.8 feet
Overall height above ground of the existing antenna structure (including beacon and lightning protection)	606.2 meters 1988.8 feet
Center of radiation of Channel 53 antenna above ground	438.3 meters 1438 feet
Elevation of site above mean sea level	109.7 meters 359.9 feet
Center of radiation of Channel 53 antenna above mean sea level	548 meters 1797.9 feet

Overall height above mean sea level of existing tower (including beacon)	715.9 meters 2348.8 feet
Antenna height above average terrain	467 meters 1532.2 feet

#### Allocation

An allocation spacing study from the proposed site has not been performed as the proposed WRAL-DT auxiliary DTV operation is to be located at the same coordinates specified in the licensed full service WRAL-DT operation (FCC File No. BLCDDT-20000403ABD) and the predicted F(50,90) 41 dBu contour will not exceed that of the authorized licensed facility.

#### Coverage

The average elevation data for 3.2 to 16.1 km along each radial has been determined from the NGDC 3-second computerized terrain database. The F(50,90) DTV coverage contours have been computed from reference to the propagation data for Channels 14-69, as published by the FCC in Figure 10b and Figure 10c, Section 73.699 of the FCC Rules and Regulations.

Table I includes the distances to the F(50,90) 48 and 41 dBu coverage contours, the average elevation 3.2 to 16.1 km, and the antenna height above average terrain for the each radial spaced 10 degrees in azimuth. Exhibit E-3 provides a map of the computed coverage contours for the auxiliary DTV operation relative to the F(50,90) 41 dBu contour of the authorized WRAL-DT construction permit.

Other Licensed and Broadcast Facilities

There are no AM facilities within 3.22 km and no FM stations within 0.5 km of the authorized site. There is one licensed TV station and five authorized DTV stations, in addition to the full service WRAL-DT facilities, within 0.1 km of the existing transmitter site. No adverse technical effect is anticipated by the proposed DTV auxiliary operation to any other FCC authorized facility.

FCC Rule, Section 1.1307

The proposed operation based upon the current OET Bulletin No. 65, Edition No. 97-01, dated August 1997 and Supplement A meets the provisions of the FCC radio frequency field (“RFF”) guidelines, and thus, complies with Section 1.1307 of the FCC Rules. Provisions will be made to reduce power or to terminate the transmitter emissions, as appropriate, when it is necessary for authorized personnel to be on the tower.

The following equations from OET Bulletin No. 65 have been used to calculate the predicted radiofrequency fields at 2 meters above ground at the base of the tower:

**Television Broadcast Stations**

$$S = [(33.4)(F^2)(0.4 * ERP_V + ERP_A)]/R^2$$

**Digital Television Broadcast Stations**

$$S = [(33.4)(F^2)(ERP^2)]/R^2$$

S = Power Density in Microwatts/sq. cm ( $\mu\text{W}/\text{cm}^2$ )

F = Relative Field Factor in the downward direction of interest (-60° to -90° elevation)

$ERP_V$  = Total Peak Visual ERP in Watts

$ERP_A$  = Total Aural ERP in Watts

ERP = Power in Watts

R = Distance from 2 meters above ground to center of radiation in meters

The radio frequency field analysis of the existing site is calculated in the following table:

<u>Station</u>	<u>Statuts</u>	<u>ERP</u> (kW)	<u>Frequency</u> (MHz)	<u>Ch</u>	<u>RCAGL</u> (m)	<u>Relative</u> <u>Field</u>	<u>S</u> ( $\mu\text{W}/\text{cm}^2$ )	<u>RFF</u> (%)
WNCN(TV)	Lic	5000	488-494	17	580	--	0.63 <sup>1</sup>	0.19
WNCN-DT	Lic	525	716-722	55	598	--	1.5 <sup>2</sup>	0.31
WRDC-DT	CP <sup>3</sup>	915	548-554	27	580	0.1	0.92	0.25
WLFL-DT	CP <sup>4</sup>	680	728-734	57	580	0.1	0.68	0.14
WRAL-DT	Lic	1000	704-710	53	599	0.038	0.14	0.03
WRAZ-DT	CP	1000	680-686	49	583.9	0.038	0.14	0.03
WRAL-DT Proposed	Aux	1000	704-710	53	438.3	0.01	0.02	0.01

For the DTV auxiliary operation, WRAL-DT proposes to use an ERI, Type ETU-P3H12-(48-53) or equivalent antenna. The manufacturer's elevation pattern for this antenna indicates a maximum relative downward field of less than 0.01 towards the ground in the vicinity of the tower. Using this relative field factor and the procedures prescribed in OET Bulletin 65, the maximum RFF resulting from the proposed operation is less than 0.02  $\mu\text{W}/\text{cm}^2$ . This is less than 0.01% of the 471

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<sup>1</sup>Value calculated in WNCN(TV) Construction Permit (FCC File Number BPCT-970916KF)

<sup>2</sup>Value calculated in WNCN-DT Application (BPCDT-980730KM)

<sup>3</sup>WRDC-DT has a pending application (FCC File No. BLCDDT-20060412AAK) for License to Cover the authorized construction permit

<sup>4</sup>WLFL-DT has a pending application (FCC File No. BLCDDT-20061206AEJ) for License to Cover the authorized construction permit

$\mu\text{W}/\text{cm}^2$  maximum human exposure to RFF recommended by the current FCC guidelines for the general population.

The total contribution by the existing NTSC and DTV broadcast facilities and the addition of the proposed auxiliary operation of WRAL-DT at 2 meters above ground level is less than 1.0% of the current FCC guidelines for maximum permissible exposure (“MPE”) for the general population/uncontrolled exposure.

Authorized personnel and rigging contractors will be alerted to the potential zone of high 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 the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

An environmental assessment (“EA”) is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the licensee indicates:

- (a)(1) The proposed facilities on an existing communications site are not located in an officially designated wilderness area.
- (a)(2) The proposed facilities on an existing communications site are not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities 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 located on a tower which was built prior to the adoption of WT Docket No. 03-128 and is grandfathered and has not affected any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The proposed facilities are not located near any known Indian religious sites.
- (a)(6) The proposed facilities are not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing tower at an existing site will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) No lighting changes are proposed 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 contained in OET Bulletin 65 (Edition 97-01) and Supplement A. Authorized personnel will be alerted to areas of the antennas where potential radiation levels are in excess of the FCC guidelines. A security fence with a locked gate precludes access to the tower site.

TABLE I  
DTV COVERAGE DATA  
FOR PROPOSED AUXILIARY OPERATION OF  
WRAL-DT, RALEIGH, NORTH CAROLINA  
CHANNEL 53 1000 KW ERP 467 METERS HAAT  
FEBRUARY 2008

<u>Radial</u> N ° E, T	<u>Average*</u>	<u>Effective</u>	<u>Depression</u>	<u>ERP</u> kW	<u>Distance to Contour</u>	
	<u>Elevation</u> meters	<u>Height</u> meters	<u>Angle</u> degrees		<u>48 dBu</u> km	<u>41 dBu</u> km
0	68.5	479.5	0.607	705.6	94.5	109.5
10	75.8	472.2	0.602	435.6	90.2	104.1
20	79.1	468.9	0.600	462.4	90.4	104.4
30	73.3	474.7	0.604	688.9	93.9	108.9
40	71.3	476.7	0.605	792.1	95.2	110.4
50	70.7	477.3	0.605	810.0	95.5	110.7
60	71.3	476.7	0.605	756.9	94.9	110.0
70	70.3	477.7	0.605	562.5	92.5	107.1
80	79.5	468.5	0.600	384.4	89.1	102.6
90	83.4	464.6	0.597	250.0	85.8	98.3
100	70.4	477.6	0.605	72.9	78.4	89.3
110	77.1	470.9	0.601	6.4	62.5	72.8
120	90.6	457.4	0.592	10.0	64.8	75.2
130	78.5	469.5	0.600	14.4	67.5	78.0
140	79.2	468.8	0.600	10.0	65.2	75.6
150	81.6	466.4	0.598	6.4	62.3	72.6
160	77.7	470.3	0.601	72.9	78.1	88.8
170	70.2	477.8	0.605	250.0	86.6	99.4
180	70.0	478.0	0.606	384.4	89.7	103.4
190	76.5	471.5	0.601	562.5	92.1	106.6
200	78.1	469.9	0.600	756.9	94.4	109.4
210	79.0	469.0	0.600	810.0	94.9	110.0
220	82.9	465.1	0.597	792.1	94.4	109.5
230	86.3	461.7	0.595	688.9	93.0	107.7
240	89.0	459.0	0.593	462.4	89.8	103.6
250	93.1	454.9	0.591	435.6	89.1	102.7
260	98.4	449.6	0.587	705.6	92.4	107.0
270	96.8	451.2	0.588	792.1	93.4	108.3
280	92.7	455.3	0.591	592.9	91.4	105.7

TABLE I  
DTV COVERAGE DATA  
FOR PROPOSED AUXILIARY OPERATION OF  
WRAL-DT, RALEIGH, NORTH CAROLINA  
CHANNEL 53 1000 KW ERP 467 METERS HAAT  
FEBRUARY 2008  
(continued)

<u>Radial</u> N ° E, T	<u>Average*</u>	<u>Effective</u>	<u>Depression</u>	<u>ERP</u> kW	<u>Distance to Contour</u>	
	<u>Elevation</u> meters	<u>Height</u> meters	<u>Angle</u> degrees		<u>48 dBu</u> km	<u>41 dBu</u> km
290	91.5	456.5	0.592	656.1	92.3	106.8
300	95.8	452.2	0.589	921.6	94.7	109.9
<b>308</b>	<b>89.4</b>	<b>458.6</b>	<b>0.593</b>	<b>1000.0</b>	<b>95.9</b>	<b>111.3</b>
310	87.4	460.6	0.594	980.1	95.8	111.3
<b>312</b>	<b>85.1</b>	<b>462.9</b>	<b>0.596</b>	<b>1000.0</b>	<b>96.2</b>	<b>111.7</b>
320	79.6	468.4	0.600	921.6	95.9	111.3
330	74.7	473.3	0.603	656.1	93.5	108.2
340	75.6	472.4	0.602	592.9	92.6	107.1
350	70.9	477.1	0.605	792.1	95.3	110.5

\*Based on data from FCC 3-second data base.

DTV Channel 53 (704-710 MHz)  
Center of Radiation 548 meters AMSL  
Antenna Height Above Average Terrain 467 meters  
Effective Radiated Power 1000 kW (30 dBk) Max

North Latitude: 35° 40' 29"  
West Longitude: 78° 31' 40"

(NAD-27)

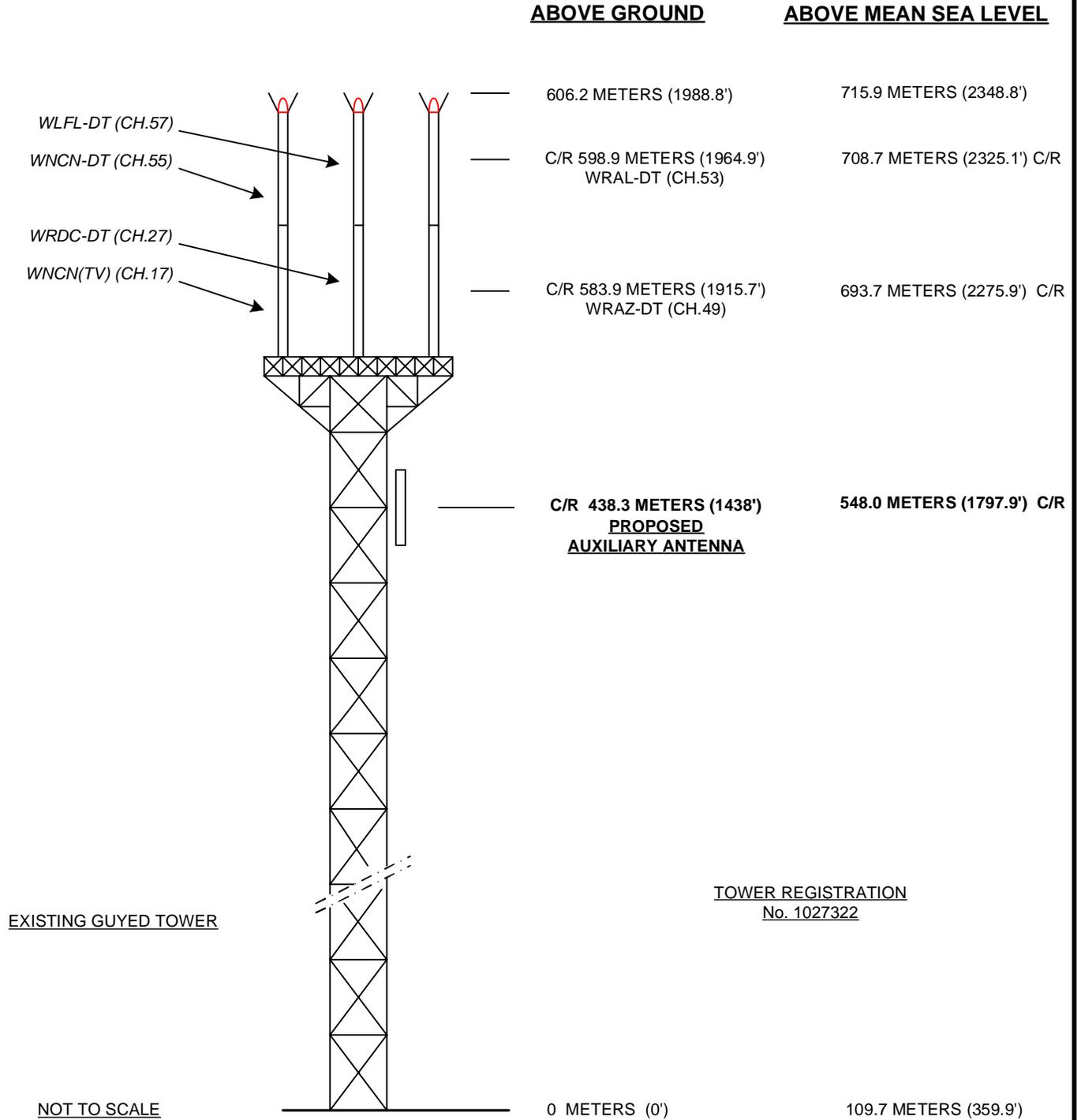


EXHIBIT E - 1  
 VERTICAL SKETCH  
 FOR THE PROPOSED AUXILIARY DTV OPERATION OF  
**WRAL-DT, RALEIGH, NORTH CAROLINA**  
 FEBRUARY 2008

NOTE: METRIC FROM ENGLISH UNITS RESULTS IN ROUNDING DIFFERENCE.

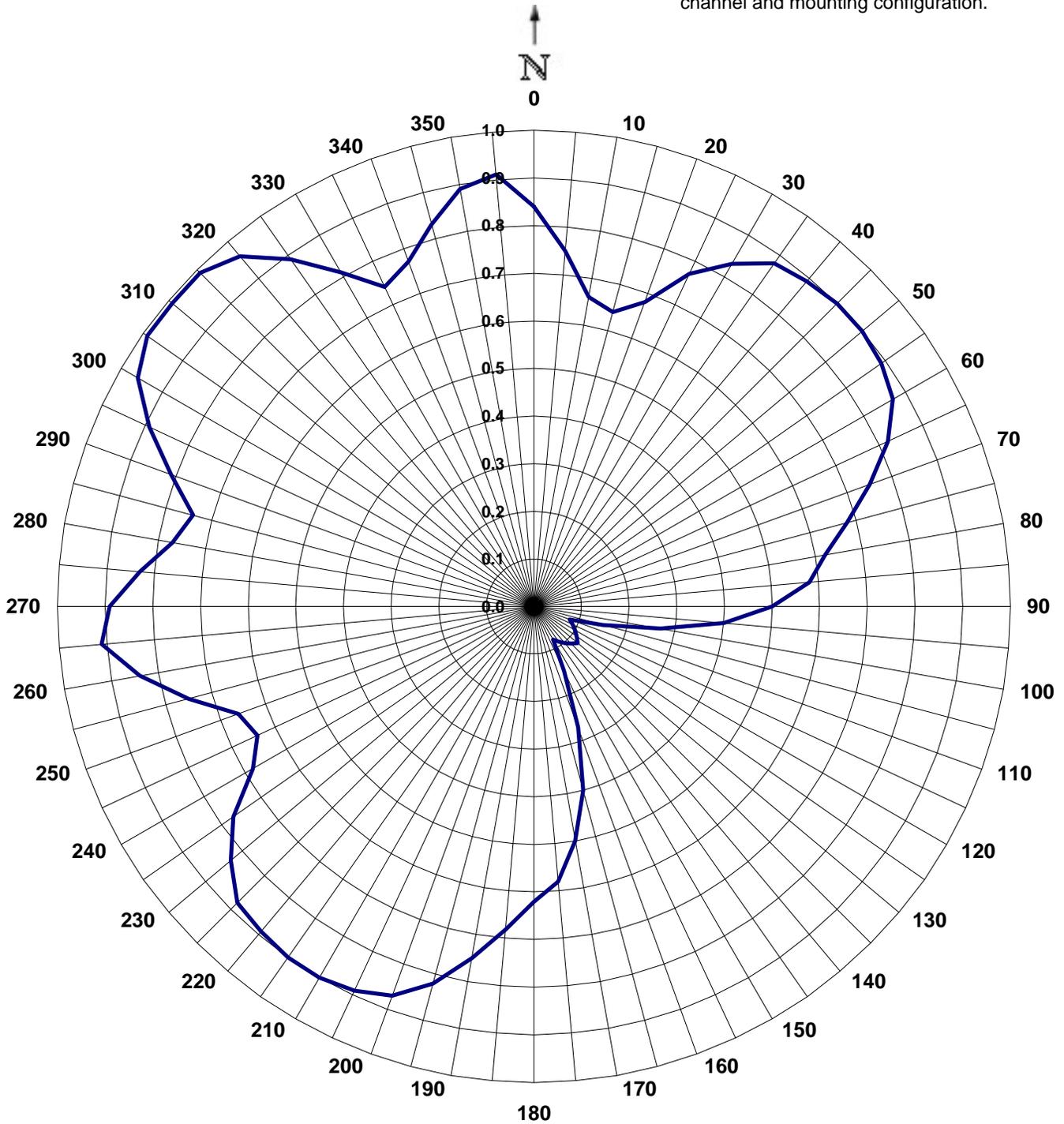
EXHIBIT E-2  
ANTENNA DATA

### AZIMUTH PATTERN

**TYPE:** CH53HAZ-W  
**Directivity:** Numeric dB  
**Peak(s) at:** 1.95 2.90

**Frequency:** 53 (Digital)  
**Location:** Raleigh, NC  
**Polarization:** Horizontal

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



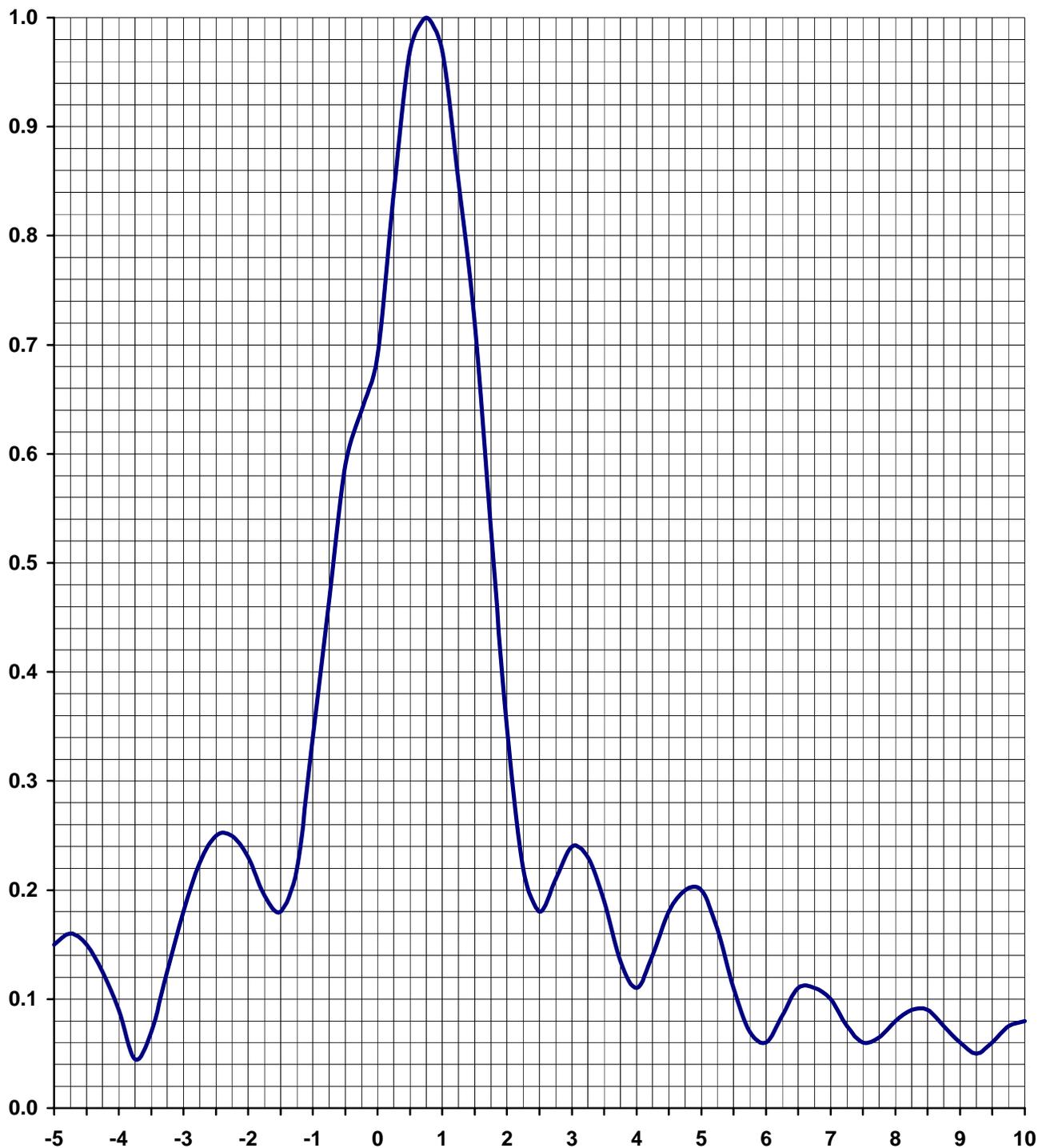
# TABULATED DATA FOR AZIMUTH PATTERN

TYPE: CH53HAZ-W

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.840	-1.514	92	0.460	-6.745	182	0.650	-3.742	276	0.820	-1.724
2	0.810	-1.830	94	0.410	-7.744	184	0.670	-3.479	278	0.780	-2.158
4	0.770	-2.270	96	0.370	-8.636	186	0.690	-3.223	280	0.770	-2.270
6	0.730	-2.734	98	0.310	-10.173	188	0.720	-2.853	282	0.740	-2.615
8	0.690	-3.223	100	0.270	-11.373	190	0.750	-2.499	284	0.740	-2.615
10	0.660	-3.609	102	0.220	-13.152	192	0.770	-2.270	286	0.760	-2.384
12	0.640	-3.876	104	0.170	-15.391	194	0.810	-1.830	288	0.770	-2.270
14	0.640	-3.876	106	0.140	-17.077	196	0.830	-1.618	290	0.810	-1.830
16	0.640	-3.876	108	0.100	-20.000	198	0.850	-1.412	292	0.840	-1.514
18	0.660	-3.609	110	0.080	-21.938	200	0.870	-1.210	294	0.870	-1.210
20	0.680	-3.350	112	0.080	-21.938	202	0.870	-1.210	296	0.910	-0.819
22	0.720	-2.853	114	0.080	-21.938	204	0.880	-1.110	298	0.940	-0.537
24	0.730	-2.734	116	0.080	-21.938	206	0.900	-0.915	300	0.960	-0.355
26	0.790	-2.047	118	0.090	-20.915	208	0.900	-0.915	302	0.970	-0.265
28	0.810	-1.830	120	0.100	-20.000	210	0.900	-0.915	304	0.990	-0.087
30	0.830	-1.618	122	0.110	-19.172	212	0.890	-1.012	306	0.990	-0.087
32	0.850	-1.412	124	0.110	-19.172	214	0.900	-0.915	308	1.000	0.000
34	0.870	-1.210	126	0.100	-20.000	216	0.900	-0.915	310	0.990	-0.087
36	0.880	-1.110	128	0.110	-19.172	218	0.890	-1.012	312	1.000	0.000
38	0.880	-1.110	130	0.120	-18.416	220	0.890	-1.012	314	0.990	-0.087
40	0.890	-1.012	132	0.110	-19.172	222	0.880	-1.110	316	0.990	-0.087
42	0.890	-1.012	134	0.100	-20.000	224	0.880	-1.110	318	0.970	-0.265
44	0.900	-0.915	136	0.110	-19.172	226	0.870	-1.210	320	0.960	-0.355
46	0.900	-0.915	138	0.110	-19.172	228	0.850	-1.412	322	0.940	-0.537
48	0.890	-1.012	140	0.100	-20.000	230	0.830	-1.618	324	0.910	-0.819
50	0.900	-0.915	142	0.090	-20.915	232	0.810	-1.830	326	0.870	-1.210
52	0.900	-0.915	144	0.080	-21.938	234	0.790	-2.047	328	0.840	-1.514
54	0.900	-0.915	146	0.080	-21.938	236	0.730	-2.734	330	0.810	-1.830
56	0.880	-1.110	148	0.080	-21.938	238	0.720	-2.853	332	0.770	-2.270
58	0.870	-1.210	150	0.080	-21.938	240	0.680	-3.350	334	0.760	-2.384
60	0.870	-1.210	152	0.100	-20.000	242	0.660	-3.609	336	0.740	-2.615
62	0.850	-1.412	154	0.140	-17.077	244	0.640	-3.876	338	0.740	-2.615
64	0.830	-1.618	156	0.170	-15.391	246	0.640	-3.876	340	0.770	-2.270
66	0.810	-1.830	158	0.220	-13.152	248	0.640	-3.876	342	0.780	-2.158
68	0.770	-2.270	160	0.270	-11.373	250	0.660	-3.609	344	0.820	-1.724
70	0.750	-2.499	162	0.310	-10.173	252	0.690	-3.223	346	0.840	-1.514
72	0.720	-2.853	164	0.370	-8.636	254	0.730	-2.734	348	0.870	-1.210
74	0.690	-3.223	166	0.410	-7.744	256	0.770	-2.270	350	0.890	-1.012
76	0.670	-3.479	168	0.460	-6.745	258	0.810	-1.830	352	0.900	-0.915
78	0.650	-3.742	170	0.500	-6.021	260	0.840	-1.514	354	0.900	-0.915
80	0.620	-4.152	172	0.530	-5.514	262	0.880	-1.110	356	0.900	-0.915
82	0.600	-4.437	174	0.560	-5.036	264	0.900	-0.915	358	0.880	-1.110
84	0.580	-4.731	176	0.580	-4.731	266	0.900	-0.915	360	0.840	-1.514
86	0.560	-5.036	178	0.600	-4.437	268	0.900	-0.915			
88	0.530	-5.514	180	0.620	-4.152	270	0.890	-1.012			
90	0.500	-6.021	182	0.650	-3.742	272	0.870	-1.210			

### ELEVATION PATTERN

<b>TYPE:</b>	<b>ETU-P3H12-53</b>		<b>Frequency:</b>	<b>53 (Digital)</b>
<b>Directivity:</b>	<b>Numeric</b>	<b>dBd</b>	<b>Location:</b>	<b>Raleigh, NC</b>
<b>Main Lobe:</b>	<u>27.31</u>	<u>14.36</u>	<b>Beam Tilt:</b>	<u>0.75</u>
<b>Horizontal:</b>	<u>13.00</u>	<u>11.14</u>	<b>Polarization:</b>	<u>Horizontal</u>



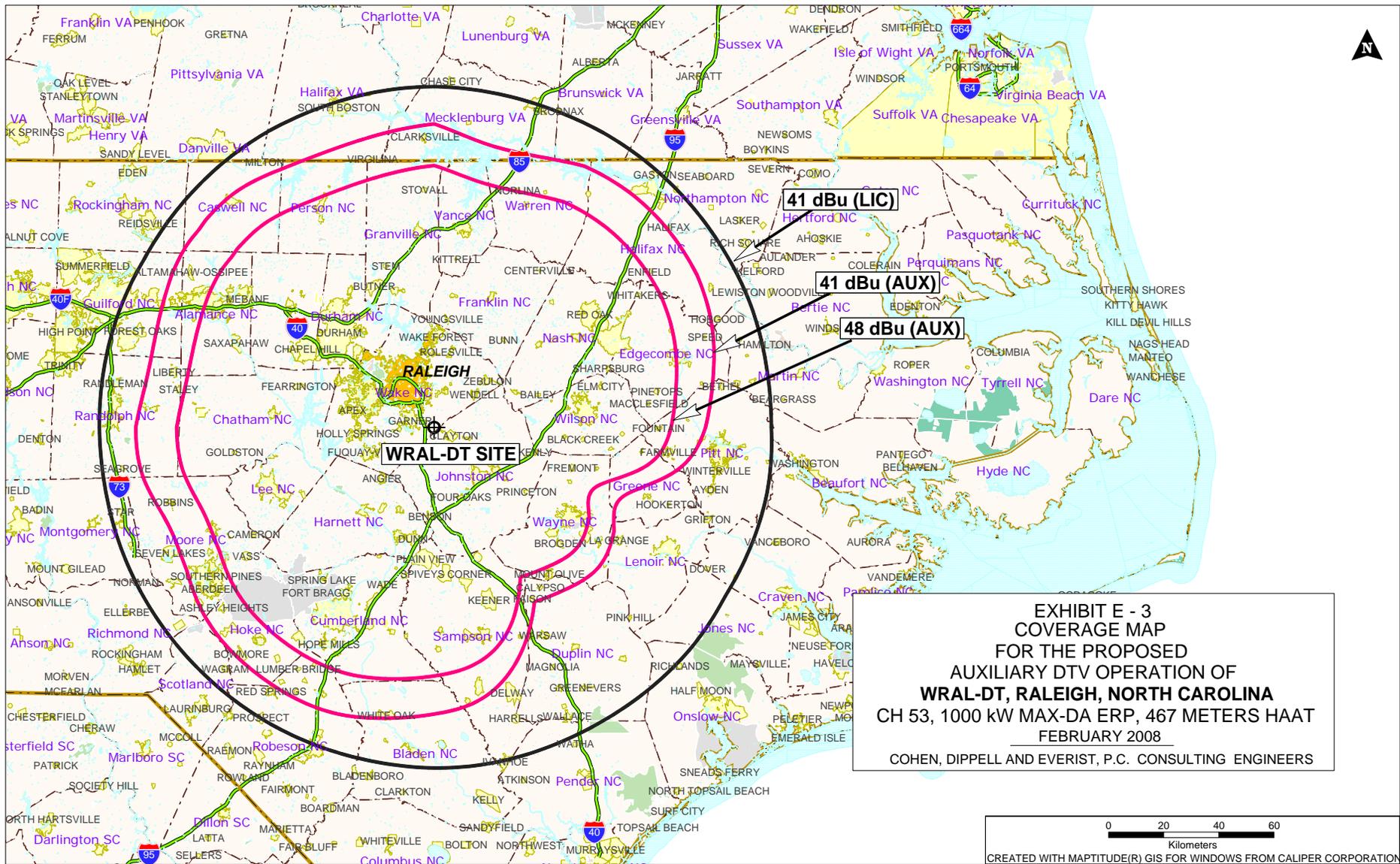
# TABULATED DATA FOR ELEVATION PATTERN

## ETU-P3H12-53

-5 to 10 degrees in 0.25 increments

10 to 90 degrees in 0.50 increments

ANGLE	FIELD	dB												
-5.00	0.150	-16.48	6.75	0.110	-19.17	27.00	0.020	-33.98	50.50	0.040	-27.96	74.00	0.010	-40.00
-4.75	0.160	-15.92	7.00	0.100	-20.00	27.50	0.030	-30.46	51.00	0.060	-24.44	74.50	0.020	-33.98
-4.50	0.150	-16.48	7.25	0.075	-22.50	28.00	0.030	-30.46	51.50	0.100	-20.00	75.00	0.020	-33.98
-4.25	0.125	-18.06	7.50	0.060	-24.44	28.50	0.020	-33.98	52.00	0.110	-19.17	75.50	0.020	-33.98
-4.00	0.090	-20.92	7.75	0.065	-23.74	29.00	0.020	-33.98	52.50	0.130	-17.72	76.00	0.020	-33.98
-3.75	0.045	-26.94	8.00	0.080	-21.94	29.50	0.020	-33.98	53.00	0.140	-17.08	76.50	0.020	-33.98
-3.50	0.070	-23.10	8.25	0.090	-20.92	30.00	0.030	-30.46	53.50	0.130	-17.72	77.00	0.020	-33.98
-3.25	0.125	-18.06	8.50	0.090	-20.92	30.50	0.030	-30.46	54.00	0.130	-17.72	77.50	0.020	-33.98
-3.00	0.180	-14.89	8.75	0.075	-22.50	31.00	0.030	-30.46	54.50	0.120	-18.42	78.00	0.020	-33.98
-2.75	0.225	-12.96	9.00	0.060	-24.44	31.50	0.020	-33.98	55.00	0.100	-20.00	78.50	0.020	-33.98
-2.50	0.250	-12.04	9.25	0.050	-26.02	32.00	0.020	-33.98	55.50	0.080	-21.94	79.00	0.020	-33.98
-2.25	0.250	-12.04	9.50	0.060	-24.44	32.50	0.020	-33.98	56.00	0.060	-24.44	79.50	0.020	-33.98
-2.00	0.230	-12.77	9.75	0.075	-22.50	33.00	0.020	-33.98	56.50	0.040	-27.96	80.00	0.020	-33.98
-1.75	0.195	-14.20	10.00	0.080	-21.94	33.50	0.010	-40.00	57.00	0.020	-33.98	80.50	0.020	-33.98
-1.50	0.180	-14.89	10.50	0.070	-23.10	34.00	0.010	-40.00	57.50	0.010	-40.00	81.00	0.020	-33.98
-1.25	0.220	-13.15	11.00	0.030	-30.46	34.50	0.030	-30.46	58.00	0.010	-40.00	81.50	0.020	-33.98
-1.00	0.340	-9.37	11.50	0.050	-26.02	35.00	0.040	-27.96	58.50	0.010	-40.00	82.00	0.020	-33.98
-0.75	0.465	-6.65	12.00	0.070	-23.10	35.50	0.040	-27.96	59.00	0.020	-33.98	82.50	0.020	-33.98
-0.50	0.590	-4.58	12.50	0.060	-24.44	36.00	0.040	-27.96	59.50	0.020	-33.98	83.00	0.010	-40.00
-0.25	0.640	-3.88	13.00	0.060	-24.44	36.50	0.020	-33.98	60.00	0.010	-40.00	83.50	0.010	-40.00
0.00	0.690	-3.22	13.50	0.060	-24.44	37.00	0.010	-40.00	60.50	0.010	-40.00	84.00	0.010	-40.00
0.25	0.840	-1.51	14.00	0.040	-27.96	37.50	0.010	-40.00	61.00	0.010	-40.00	84.50	0.010	-40.00
0.50	0.970	-0.26	14.50	0.030	-30.46	38.00	0.030	-30.46	61.50	0.010	-40.00	85.00	0.010	-40.00
0.75	1.000	0.00	15.00	0.060	-24.44	38.50	0.030	-30.46	62.00	0.010	-40.00	85.50	0.010	-40.00
1.00	0.970	-0.26	15.50	0.060	-24.44	39.00	0.030	-30.46	62.50	0.010	-40.00	86.00	0.010	-40.00
1.25	0.850	-1.41	16.00	0.040	-27.96	39.50	0.020	-33.98	63.00	0.010	-40.00	86.50	0.010	-40.00
1.50	0.720	-2.85	16.50	0.320	-9.90	40.00	0.030	-30.46	63.50	0.010	-40.00	87.00	0.010	-40.00
1.75	0.530	-5.51	17.00	0.200	-13.98	40.50	0.040	-27.96	64.00	0.010	-40.00	87.50	0.010	-40.00
2.00	0.350	-9.12	17.50	0.240	-12.40	41.00	0.050	-26.02	64.50	0.010	-40.00	88.00	0.010	-40.00
2.25	0.220	-13.15	18.00	0.600	-4.44	41.50	0.060	-24.44	65.00	0.010	-40.00	88.50	0.010	-40.00
2.50	0.180	-14.89	18.50	0.050	-26.02	42.00	0.050	-26.02	65.50	0.010	-40.00	89.00	0.010	-40.00
2.75	0.210	-13.56	19.00	0.020	-33.98	42.50	0.040	-27.96	66.00	0.010	-40.00	89.50	0.010	-40.00
3.00	0.240	-12.40	19.50	0.030	-30.46	43.00	0.020	-33.98	66.50	0.010	-40.00	90.00	0.000	---
3.25	0.230	-12.77	20.00	0.050	-26.02	43.50	0.010	-40.00	67.00	0.010	-40.00			
3.50	0.190	-14.42	20.50	0.060	-24.44	44.00	0.010	-40.00	67.50	0.010	-40.00			
3.75	0.135	-17.39	21.00	0.050	-26.02	44.50	0.020	-33.98	68.00	0.010	-40.00			
4.00	0.110	-19.17	21.50	0.030	-30.46	45.00	0.030	-30.46	68.50	0.010	-40.00			
4.25	0.140	-17.08	22.00	0.040	-27.96	45.50	0.020	-33.98	69.00	0.010	-40.00			
4.50	0.180	-14.89	22.50	0.070	-23.10	46.00	0.020	-33.98	69.50	0.010	-40.00			
4.75	0.200	-13.98	23.00	0.100	-20.00	46.50	0.020	-33.98	70.00	0.001	-60.00			
5.00	0.200	-13.98	23.50	0.120	-18.42	47.00	0.040	-27.96	70.50	0.001	-60.00			
5.25	0.165	-15.65	24.00	0.120	-18.42	47.50	0.050	-26.02	71.00	0.001	-60.00			
5.50	0.110	-19.17	24.50	0.110	-19.17	48.00	0.060	-24.44	71.50	0.001	-60.00			
5.75	0.070	-23.10	25.00	0.080	-21.94	48.50	0.050	-26.02	72.00	0.010	-40.00			
6.00	0.060	-24.44	25.50	0.060	-24.44	49.00	0.040	-27.96	72.50	0.010	-40.00			
6.25	0.085	-21.41	26.00	0.040	-27.96	49.50	0.030	-30.46	73.00	0.010	-40.00			
6.50	0.110	-19.17	26.50	0.010	-40.00	50.00	0.010	-40.00	73.50	0.010	-40.00			



**EXHIBIT E - 3**  
**COVERAGE MAP**  
**FOR THE PROPOSED**  
**AUXILIARY DTV OPERATION OF**  
**WRAL-DT, RALEIGH, NORTH CAROLINA**  
**CH 53, 1000 kW MAX-DA ERP, 467 METERS HAAT**  
**FEBRUARY 2008**  
 COHEN, DIPPELL AND EVERIST, P.C. CONSULTING ENGINEERS

0 20 40 60  
 Kilometers  
 CREATED WITH MAPTITUDE(R) GIS FOR WINDOWS FROM CALIPER CORPORATION

**SECTION III - D - DTV Engineering**

**Complete Questions 1-5, and provide all data and information for the proposed facility, as requested in Technical Specifications, Items 1-13.**

**Pre-Transition Certification Checklist:** An application concerning a pre-transition channel must complete questions 1(a)-(c), and 2-5. A correct answer of "Yes" to all of the questions will ensure an expeditious grant of a construction permit application to modify pre-transition facilities. However, if the proposed facility is located within the Canadian or Mexican borders, coordination of the proposal under the appropriate treaties may be required prior to grant of the application. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

**Post-Transition Expedited Processing.** An application concerning a post-transition channel must complete questions 1(a), (d)-(e), and 2-5. A station applying for a construction permit to build its post-transition channel will receive expedited processing if its application (1) does not seek to expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B"); (2) specifies facilities that match or closely approximate those defined in the new DTV Table Appendix B facilities; and (3) is filed within 45 days of the effective date of Section 73.616 of the rules adopted in the Report and Order in the Third DTV Periodic Review proceeding, MB Docket No. 07-91.

- 1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:
  - (a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.  Yes  No
  - (b) It will operate a pre-transition facility from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.  Yes  No
  - (c) It will operate a pre-transition facility with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.  Yes  No
  - (d) It will operate at post-transition facilities that do not expand the noise-limited service contour in any direction beyond that established by Appendix B of the Seventh Report and Order in MB Docket No. 87-268 establishing the new DTV Table of Allotments in 47 C.F.R. § 73.622(i) ("new DTV Table Appendix B").  Yes  No  
 N/A
  - (e) It will operate at post-transition facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the new DTV Table Appendix B.  Yes  No  
 N/A
- 2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RIF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307.  Yes  No

Applicant must **submit the Exhibit** called for in Item 13.

- 3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community.  Yes  No
- 4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable.  Yes  No
- 5. The antenna structure to be used by this facility has been registered by the Commission and will not require reregistration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.  Yes  No

**SECTION III - D DTV 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 Number: DTV \_\_\_\_\_ Analog TV, if any \_\_\_\_\_

2. Zone:  I  II  III

3. Antenna Location Coordinates: (NAD 27)

\_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "  N  S Latitude  
 \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "  E  W Longitude

4. Antenna Structure Registration Number: \_\_\_\_\_

Not applicable  FAA Notification Filed with FAA

5. Antenna Location Site Elevation Above Mean Sea Level: \_\_\_\_\_ meters

6. Overall Tower Height Above Ground Level: \_\_\_\_\_ meters

7. Height of Radiation Center Above Ground Level: \_\_\_\_\_ meters

8. Height of Radiation Center Above Average Terrain: \_\_\_\_\_ meters

9. Maximum Effective Radiated Power (average power): \_\_\_\_\_ kW

10. Antenna Specifications:

Manufacturer	Model
--------------	-------

a.  Not Applicable

b. Electrical Beam Tilt: \_\_\_\_\_ degrees  Not Applicable

c. Mechanical Beam Tilt: \_\_\_\_\_ degrees toward azimuth \_\_\_\_\_ degrees True  Not Applicable

Attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). Exhibit No.

d. Polarization:  Horizontal  Circular  Elliptical

**TECH BOX**

e. Directional Antenna Relative Field Values:  Not applicable (Nondirectional)  
 Rotation: \_\_\_\_\_ °  No rotation

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

If a directional antenna is proposed, the requirements of 47 C.F.R. Section 73.625(c) must be satisfied. **Exhibit required.**

Exhibit No.

11. Does the proposed facility satisfy the pre-transition interference protection provisions of 47 C.F.R. Section 73.623(a) (Applicable only if **Certification Checklist** Items 1(a), (b), or (c) are answered "No.") and/or the post-transition interference protection provisions of 47 C.F.R. Section 73.616?  Yes  No

If "No," attach as an Exhibit justification therefore, including a summary of any related previously granted waivers.

Exhibit No.

12. If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if **Certification Checklist** Item 3 is answered "No.")

Exhibit No.

13. **Environmental Protection Act. Submit in an Exhibit** the following:

Exhibit No.

a. If **Certification Checklist Item 2** is answered "Yes," a brief explanation of why an Environmental Assessment is not required. Also describe in the Exhibit the steps that will be taken to limit RF radiation exposure to the public and to persons authorized access to the tower site.

By checking "Yes" to **Certification Checklist** Item 2, 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 radio frequency electromagnetic exposure in excess of FCC guidelines.

If **Certification Checklist** Item 2 is answered "No," an Environmental Assessment as required by 47 C.F.R. Section 1.1311.

**PREPARER'S CERTIFICATION IN SECTION III MUST BE COMPLETED AND SIGNED.**

13. **Petition for Rulemaking/Counterproposal to Add New FM Channel to FM Table of Allotments.** If the application is being submitted concurrently with a Petition for Rulemaking or Counterproposal to Amend the FM Table of Allotments (47 C.F.R. Section 73.202) to add a new FM channel allotment, petitioner/counter-proponent certifies that, if the FM channel allotment requested is allotted, petitioner/counter-proponent will apply to participate in the auction of the channel allotment requested and specified in this application.

Yes  No  N/A

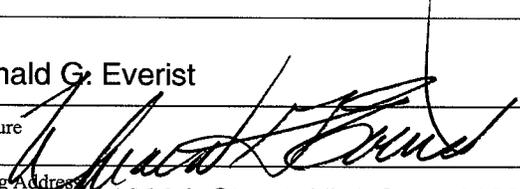
I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in 'good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and request an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended.)

Typed or Printed Name of Person Signing	Typed or Printed Title of Person Signing
Signature	Date

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

**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 <b>Donald G. Everist</b>	Relationship to Applicant (e.g., Consulting Engineer) <b>Consulting Engineer</b>	
Signature 	Date <b>February 1, 2008</b>	
Mailing Address <b>1300 L Street, NW, Suite 1100</b>		
City <b>Washington</b>	State or Country (if foreign address) <b>DC</b>	ZIP Code <b>20005</b>
Telephone Number (include area code) <b>202-898-0111</b>	E-Mail Address (if available) <b>cde@attglobal.net</b>	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).