

ENGINEERING STATEMENT
RE AMENDMENT OF APPLICATION
FCC FILE NO. BPCDT-20000501AJY
ON BEHALF OF
WLEX-TV COMMUNICATIONS, LLC.
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 KW ERP MAX 286 METERS HAAT

JULY 2004

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)

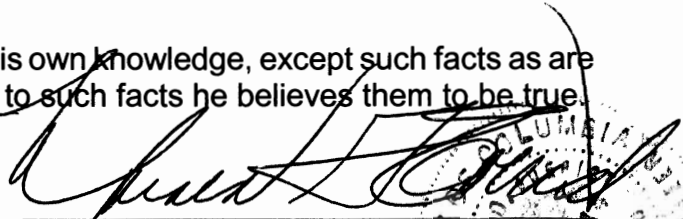
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

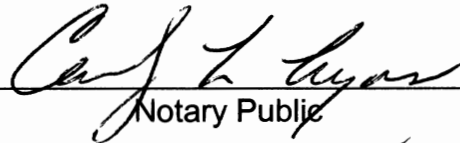
That the attached engineering report was prepared by him or under his supervision and direction and

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.



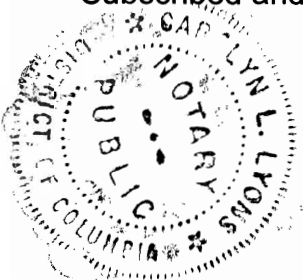
Donald G. Everist
District of Columbia
Professional Engineer
Registration No. 5714

Subscribed and sworn to before me this 23rd day of July, 2004.



Notary Public

My Commission Expires: 2/28/2008



This engineering statement has been prepared on behalf of WLEX-TV Communications, LLC, licensee of WLEX-TV, Lexington, Kentucky. The purpose of this engineering statement is to accompany its application to construct digital television ("DTV") facilities; specifically that required in FCC Form 301, Section III-D.

WLEX-TV is licensed to operate on NTSC television Channel 18 with a maximum visual effective radiated power ("ERP") of 1100 kW (horizontal polarization) and height above average terrain ("HAAT") of 195 meters (640 feet). WLEX-DT has been allocated DTV Channel 22 with facilities of 50 kW ERP (maximum directional) and HAAT of 195 meters in the revised DTV Table of Allotments.¹ Under separate cover, WLEX-DT has petitioned the Commission to allot Channel 39 to WLEX-DT in place of Channel 22. WLEX-DT proposes to construct DTV facilities for Channel 39 (620-626 MHz) of 475 kW (directional, horizontal polarization) with HAAT of 286.0 meters at an existing site approximately 9 km east-southeast of the allotted site.

The proposed antenna will be the panel system and will be side-mounted on an existing tower. Exhibit E-1 shows a tower sketch and the antenna arrangement on the tower.

According to the FCC engineering data base as of June 8, 2004, there are no AM stations located within 3.2 km of the existing WLEX-DT tower site and there are no FM stations within 100 meters. The tower currently supports the licensed operation of WTVQ-TV, Channel 36, Lexington, Kentucky. Also WTVQ-DT, Channel 40 has received authorization to construct at this site

¹ "In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service", MM Docket No. 87-286, Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders (FCC 98-315), 12/18/98, DTV Table of Allotments, Appendix B, Page B-56.

for its DTV operation (FCC File No. BPCDT-19991025DD) for 1000 kW directional at 286 meters HAAT.

The existing tower will be modified such that the WTVQ-TV, Channel 36 antenna remains in the same position and the overall height above ground of the tower (303.0 meters) will remain unchanged. The existing transmitter site is located at 6940 Man-O-War Boulevard, Lexington, Kentucky. The tower registration number is 1044034.

The geographic coordinates of the site are:

North Latitude: 38° 02' 03"

West Longitude: 84° 23' 39"

NAD-27

Equipment Data

Antenna: Dielectric, Type TFU-30DSC-R 3S180DC (or equivalent) horizontally polarized antenna with 0.75° electrical beam tilt. The vertical and horizontal plane patterns and other exhibits required by Section 73.625(c) are herein included as Exhibits E-2a thru E-2g.

Power Data

Transmitter output	15.89 kW	12.01 dBk
Transmission line efficiency/loss Type EIA 75 ohm 6-1/8" rigid coax or equivalent 305 m (1000 ft)	75.5%	1.22 dB
Antenna input	12.0 kW	10.79 dBk
Antenna gain, peak	39.6	15.98 dB
Antenna gain, horizontal plane	25.3	14.03 dB

Effective Radiated Power, peak	475.0 kW	26.77 dBk
Max. ERP, horizontal plane	303.6 kW	24.82 dBk

Elevation Data

Vertical dimension of Channel 39 side-mounted	16.0 meters 52.5 feet
Overall height above ground of the proposed antenna structure (including beacon)	303.0 meters 994.1 feet
Center of radiation of Channel 39 antenna above ground	276.7 meters 907.8 feet
Elevation of site above mean sea level	305.0 meters 1000.7 feet
Center of radiation of Channel 39 antenna above mean sea level	581.7 meters 1908.4 feet
Overall height above mean sea level of proposed tower (including beacon)	608.0 meters 1994.8 feet
Antenna height above average terrain	286.0 meters

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

Coverage

The average elevation data for 3.2 to 16.1 km along each radial have been determined based upon 3-second NGDC terrain data. The F(50,90) DTV coverage contour has 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.

Utilizing the formula in Section 73.625(b)(2) of the Rules for the effective heights, it is found that the depression angle, A_h , varies from 0.46 to 0.48 degrees. Since the relative vertical field is

greater than 90% of the maximum at these depression angles, the maximum power was used in determining the distance to the DTV contour.

Table 1 includes the distances to the 48 and 41 dBu F(50,90) coverage contour, the average elevation 3.2 to 16.1 km, and the antenna height above average terrain for each ten degrees in azimuth commencing with N 0 ° E, T. Exhibit E-3 shows the 48 dBu and 41 dBu contours and the city of license.

Interference Analysis

A study of predicted interference caused by the proposed WLEX-DT service has been performed using a version of the Longley-Rice program as described in OET Bulletin No. 69 (July 2, 1997) and the Public Notice, "Additional Application Processing Guidelines for Digital Television (DTV)" (August 1998). The FCC's FORTRAN-77 code was modified only to the extent necessary (primarily input/output handling) for the program to run on a Windows98/Intel platform. Comparison of service/interference areas and populations indicates that this model closely matches the FCC's evaluation program. Best efforts have been made to use data and calculations identical to the FCC's program. Any slight differences are attributable to compiler, operating system and/or processor characteristics. The effect of any variance in calculated population values versus the FCC's program is minimized when differencing a given model's results, e.g., new interference equals total interference less baseline interference. The effect is further reduced for ratios of calculated population values, e.g., incremental population affected as a percent of total population \leq served. The model employs the Longley-Rice propagation methodology and evaluates in grid cells of approximately 4 km² using 3-second terrain data sampled approximately every 1.0 km at one degree

azimuth intervals with 1990 census centroids. All studies are based upon data in the June 8, 2004, update of the FCC's engineering data base.

Table II lists the potential interferees which are to be considered according to the processing guidelines cited above. The last column of Table II shows the predicted new interference caused by the proposed WLEX-DT operation. None of the affected NTSC stations suffer more than 2% new interference from WLEX-DT or 10% total new interference new from all DTV stations. None of the affected DTV stations are predicted to receive more than 2% new interference from WLEX-DT or total interference that reduces their predicted coverage to less than 90% replication.

Other Licensed and Broadcast Facilities

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

FCC Rule, Section 1.1307

The proposed 475 kW operation will utilize the Dielectric, Type TFU-30DSC-R 3S180DC antenna (or equivalent) described above with a center of radiation above ground of 276.7 meters. The proposed antenna will be side-mounted on the existing guyed steel lattice tower with an overall height of 303 meters above ground.

As previously indicated, there are no AM stations located within 3.2 km of the proposed tower site. According to the FCC data base (June 8, 2004 update), the only station located within 100 meters is WTVQ-TV on the same tower. Also, WTVQ-DT is expected to locate on the same tower and is included in the RFF calculations below. The existing site and tower is owned by Media General

Broadcasting, Inc., licensee of WTVQ-TV. According to the owner, access to the tower property is prevented by an eight foot security fence with a locked gate.

The proposed operation based upon the current OET Bulletin No. 65, Edition 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. The elevation pattern for the Dielectric, Type TFU-30DSC-R 3S180DC antenna in Exhibit E-2c shows a maximum relative field of less than 0.11 toward the ground (50° to 90° below the horizontal). Calculation according to OET Bulletin 65 predicts a maximum RFF power density of less than 3 $\mu\text{W}/\text{cm}^2$, 2 meters above ground or less than one percent of the uncontrolled (general public) Maximum Permissible Exposure ("MPE") guideline of 415 $\mu\text{W}/\text{cm}^2$.

The licensed operation of WTVQ-TV on Channel 36 utilizes an RCA, Type TFU-25G antenna with a center of radiation above ground of 293.5 meters. The manufacturer's published data indicate the relative field toward the ground in the vicinity of the tower (50° to 70° below the horizontal) does not exceed 0.1. Calculation according to OET Bulletin 65 as above predicts a maximum RFF power density of less than 5 $\mu\text{W}/\text{cm}^2$, 2 meters above ground or less than 1.2% of the uncontrolled (general public) MPE guideline.

The construction permit for WTVQ-DT (BPCDT-991025DD) predicts an RFF contribution of WTVQ-DT of less than 1% the uncontrolled MPE guidelines. The total predicted RFF contribution (2 meters AGL) of the three stations expected to operate for the existing tower (WLEX-DT, WTVQ-DT and WTVQ-TV) is less than five percent (5%) of the uncontrolled (general public) MPE guidelines.

According to the applicant, RFF safety will be coordinated with the site owner.

Authorized personnel and rigging contractors will be alerted to the potential zone of high radiation on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

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

- (a)(1) The proposed facilities mounted on an existing tower are not located in an officially designated wilderness area.
- (a)(2) The proposed facilities mounted on an existing tower are not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities mounted on an existing tower will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities mounted on an existing tower will not jeopardize the continued existence of any proposed endangered or threatened species and are not likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities located on an 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 existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the DTV facilities on a modified 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) 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 unauthorized on the tower where potential radiation levels are in excess of the FCC guidelines. A security fence with a locked gate restricts unauthorized access to the tower site.

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TABLE I
COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 kW ERP (MAX. DA) 286 METERS HAAT
JULY 2004

Radial	Average* Elevation	Effective	Depressio n	ERP at Radio	<u>Distance to Contour F(50,90)</u>	
					48 dBu	41 dBu
<u>Bearing</u> N ° E, T	<u>3.2-16.1 km</u> meters	<u>Height</u> meters	<u>Angle</u>	<u>Horizon</u> kW	<u>City Grade</u> km	<u>Noise-Limited</u> km
0	286.0	295.7	0.476	79.8	67.5	76.4
10	296.1	285.6	0.468	94.1	67.8	76.4
20	284.2	297.5	0.478	120.2	69.8	79.2
30	282.5	299.2	0.479	139.5	70.7	80.4
40	290.6	291.1	0.473	137.5	70.1	79.4
50	300.7	281.0	0.464	127.9	69.0	77.8
60	297.2	284.5	0.467	140.6	69.7	78.8
70	300.2	281.5	0.465	187.9	71.0	80.3
80	300.8	280.9	0.464	253.8	72.5	82.4
90	303.0	278.7	0.462	313.2	73.5	83.7
100	305.1	276.6	0.461	356.2	74.0	84.5
110	304.1	277.6	0.462	393.3	74.6	85.4
120	292.9	288.8	0.471	430.5	76.2	87.7
130	285.9	295.8	0.476	460.9	77.3	89.3
140	279.7	302.0	0.481	474.1	78.1	90.3
150	282.9	298.8	0.479	472.2	77.8	89.9
160	273.5	308.2	0.486	464.6	78.6	90.9
170	278.6	303.1	0.482	461.8	78.1	90.2
180	296.1	285.6	0.468	467.4	76.4	88.0
190	307.8	273.9	0.458	474.1	75.3	86.5
200	303.3	278.4	0.462	471.2	75.7	87.1
210	290.9	290.8	0.472	450.6	76.7	88.4
220	296.8	284.9	0.468	416.1	75.6	86.9
230	302.3	279.4	0.463	378.8	74.6	85.4

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COMPUTED COVERAGE DATA
FOR THE PROPOSED DTV OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 kW ERP (MAX. DA) 286 METERS HAAT
JULY 2004
(continued)

Radial	Average* Elevation	Effective	Depressio n	ERP at Radio	<u>Distance to Contour F(50,90)</u>	
					48 dBu	41 dBu
<u>Bearing</u> N ° E, T	<u>3.2-16.1 km</u> meters	<u>Height</u> meters	<u>Angle</u>	<u>Horizon</u> kW	<u>City Grade</u> km	<u>Noise-Limited</u> km
240	306.2	275.5	0.460	340.8	73.6	84.0
250	304.7	277.0	0.461	291.2	72.9	82.9
260	307.8	273.9	0.458	227.5	71.4	80.7
270	301.0	280.7	0.464	165.3	70.3	79.4
280	293.7	288.0	0.470	131.4	69.6	78.7
290	292.3	289.4	0.471	130.9	69.7	78.9
300	291.6	290.1	0.472	140.6	70.1	79.4
310	289.0	292.7	0.474	133.9	70.1	79.4
320	288.4	293.3	0.474	109.0	69.0	78.1
330	290.2	291.5	0.473	86.6	67.7	76.5
340	279.1	302.6	0.482	77.9	67.9	77.0
350	277.0	304.7	0.484	77.1	68.0	77.1

*Based on data from FCC 3-second data base

DTV Channel 39 (620-626 MHz)
Eight Radial Average Elevation 3.2 to 16.1 km 295.7 meters AMSL
Center of Radiation 581.7 meters AMSL
Antenna Height Above Average Terrain 286 meters
Site Elevation 305 meters AMSL
Effective Radiated Power 475 kW (26.77 dBk) Max.DA

North Latitude: 38° 02' 03"
West Longitude: 84° 23' 39"
(NAD-27)

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TABLE II
POTENTIAL INTERFEREES
FOR THE PROPOSED OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 KW MAX ERP 267 METERS
JULY 2004

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Distance</u> km	<u>Status</u>	<u>Application</u>	<u>Interference</u>
24	W24BW	Louisville, KY	131.5	Lic	BLTTL-20010703AAA	none
24	W24BW	Louisville, KY	131.5	CP	BMPTTL-20010703AAC	none
25	W66DA	Irvine, KY	78.8	App	BMPTTL-20040202ASU	none
25	W24BT	Lexington, KY	1.0	App	BPTTL-20011010AAH	none
25	WBQC-CA	Cincinnati, OH	121.6	Lic	BLTTL-19980826JB	none
25	WOTH-LP	Cincinnati, OH	121.6	CP mod	BMPTTL-20020827ABX	none
32	WLKY-TV	Louisville, KY	131.2	Lic	BLCT-2435	none
35	WKHA	Hazard, KY	141.5	Lic	BLET-19810303KE	none
36	WTVQ-TV	Lexington, KY	0.0	Lic	BLCT-19800619IX	none
38	WKMJ-TV	Louisville, KY	130.9	Lic	BLEDT-20030410AAK	none
38	WKMJ-DT	Louisville, KY	130.9	PLN	DTVPLN-DTVP0989	none
38	WKMR	Morehead, KY	88.0	Lic	BLET-19830725KL	1.2%
38	WBQC-CA	Cincinnati, OH	121.6	CP	BMJPTTA-20010112AAT	none
38	WOTH-LP	Cincinnati, OH	121.6	STA	BSTA-20021118ACW	none

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TABLE II
POTENTIAL INTERFEREES
FOR THE PROPOSED OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 KW MAX ERP 267 METERS
JULY 2004
(continued)

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Distance</u> km	<u>Status</u>	<u>Application</u>	<u>Interference</u>
39	W32CM	Champaign, IL	403.7	Lic	BLTTL-19920420IM	none
39	WFWA	Fort Wayne, IN	347.9	Lic	BLET-19920131KF	none
39	W39AA	Fort Wayne, IN	347.9	Lic	BLTTL-19841001IC	none
39	WKOI-TV	Richmond, IN	165.6	CP	BPCDT-19990601KF	0.6%
39	WKOI-DT	Richmond, IN	165.6	PLN	DTVPLN-DTVP1031	0.5%
39	WBAK-TV	Terre Haute, IN	292.5	CP mod	BMPCDT-19991101AJG	0.3%
39	WBAK-DT	Terre Haute, IN	292.8	PLN	DTVPLN-DTVP1032	none
39	W39CK	Corbin, KY	119.7	Lic	BLTTL-19991202AAY	none
39	W39CJ	Elizabethtown, KY	132.9	Lic	BLTT-20010713AAG	0.3%
39	WDLI-TV	Canton, OH	412.7	Lic	BLCDDT-20030421ABK	none
39	WDLI-DT	Canton, OH	411.8	PLN	DTVPLN-DTVP1042	none
39	WOTH-LP	Cincinnati, OH	121.6	Lic	BLTTL-19990302JH	none
39	WOCB-LP	Marion, OH	306.7	Lic	BLTTA-20031212AAO	none

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TABLE II
POTENTIAL INTERFEREES
FOR THE PROPOSED OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 KW MAX ERP 267 METERS
JULY 2004
(continued)

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Distance</u> km	<u>Status</u>	<u>Application</u>	<u>Interference</u>
39	WOCB-LP	Marion, OH	306.7	Lic	BLTTL-19921223IG	none
39	WWWB	Rock Hill, SC	414.1	CP mod	BMPCDT-20000501ACC	none
39	WFVT-DT	Rock Hill, SC	414.1	PLN	DTVPLN-DTVP1045	none
39	WYHB-CA	Chattanooga, TN	324.0	Lic	BLTTL-19980824JC	none
39	WYHB-CA	Chattanooga, TN	324.0	CP	BPTTL-20010116AIM	none
39	WEMT	Greeneville, TN	268.6	Lic	BLCT-19860114KF	0.1%
39	WEMT	Greeneville, TN	268.6	CP	BPCT-20030701AKA	0.1%
39	WHTN	Murfreesboro, TN	282.4	Lic	BLCT-19840120KK	0.2%
39	WHTN	Murfreesboro, TN	282.3	CP	BPCT-20020509AAS	0.1%
39	WLPX-TV	Charleston, WV	233.6	Lic	BLCDDT-20020510AAM	0.3%
39	WKRP-DT	Charleston, WV	233.6	PLN	DTVPLN-DTVP1054	1.3%
40	WNKY	Bowling Green, KY	192.0	Lic	BLCT-20011206ABG	none
40	WTVQ-TV	Lexington, KY	0.0	CP	BPCDDT-19991025ADD	none

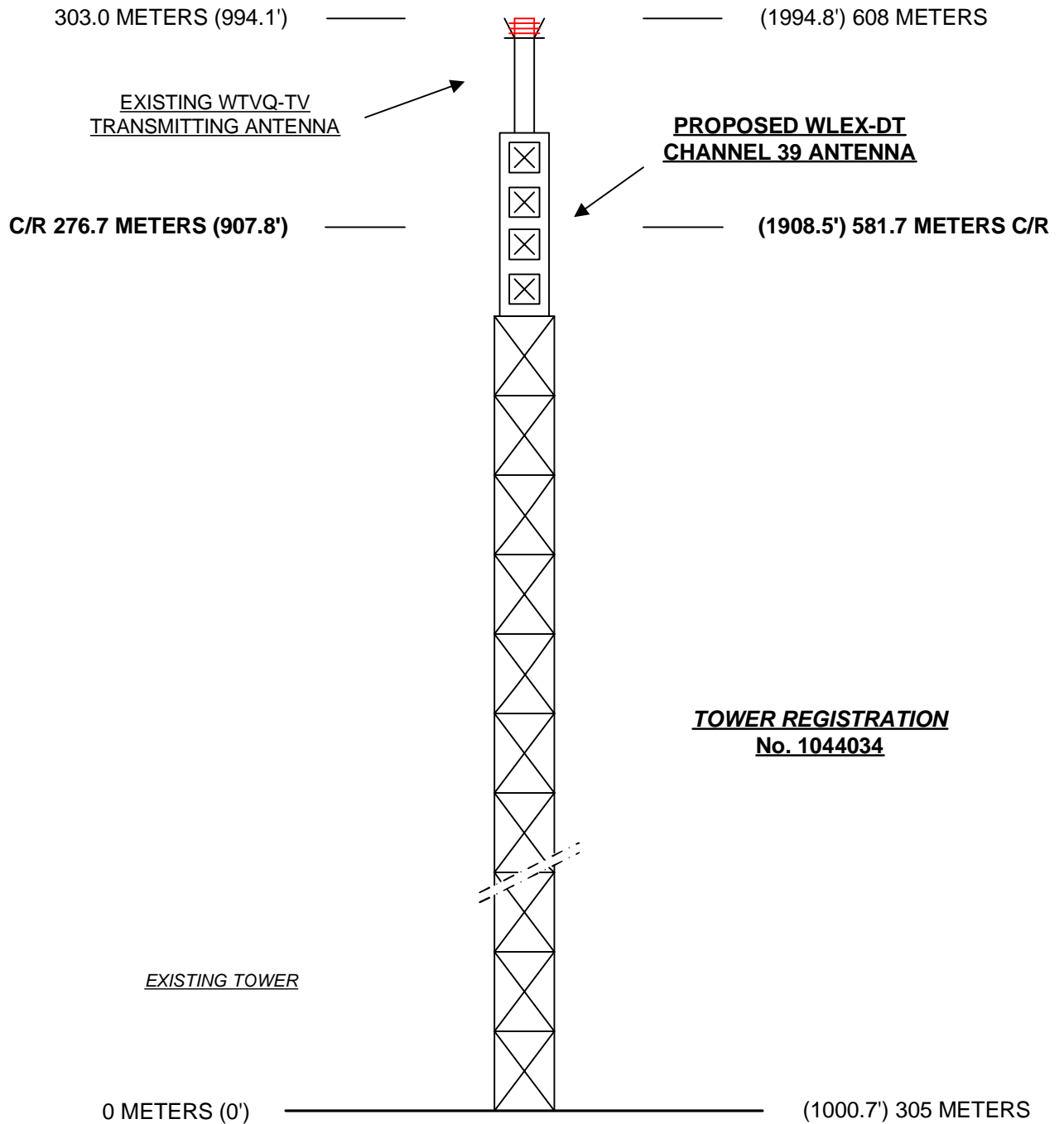
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POTENTIAL INTERFEREES
FOR THE PROPOSED OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
CHANNEL 39 475 KW MAX ERP 267 METERS
JULY 2004
(continued)

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Distance</u> km	<u>Status</u>	<u>Application</u>	<u>Interference</u>
40	WTVQ-DT	Lexington, KY	0.0	PLN	DTVPLN-DTVP1065	none
40	WRCX-LP	Dayton, OH	187.0	Lic	BLTTL-20040203ABQ	none
40	WRCX-LP	Dayton, OH	188.3	App	BPTTL-20040406ABW	none
41	WDRB	Louisville, KY	131.9	Lic	BLCT-19900209KG	none
42	WPBO	Portsmouth, OH	141.5	Lic	BLET-19930707KE	none
46	WKLE	Lexington, KY	18.2	Lic	BLET-353	none

ABOVE GROUND

ABOVE MEAN SEA LEVEL



NOT TO SCALE

EXHIBIT E - 1
VERTICAL SKETCH
FOR THE PROPOSED DTV OPERATION OF
WLEX-DT, LEXINGTON, KENTUCKY
JUNE 2004



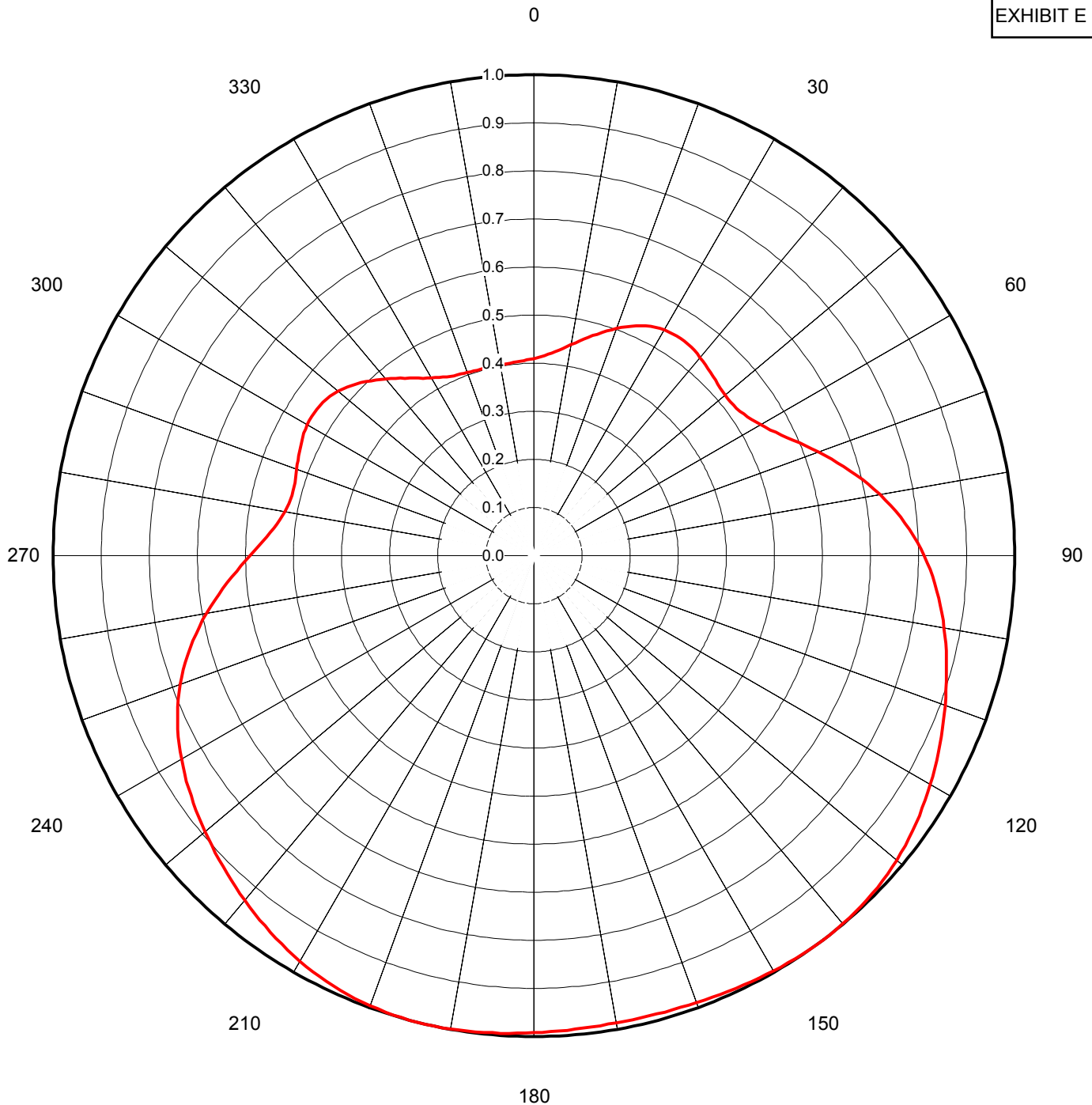
Proposal Number	1244:2:133357	Revision:	1
Date	25-Jun-03		
Call Letters	WLEX-DT	Channel	39
Location	Lexington, KY		
Customer			
Antenna Type	TFU-30DSC-R 3S180 DC		

AZIMUTH PATTERN

Gain **1.80** (2.55 dB)
Calculated / Measured **Calculated**

Frequency **623.00 MHz**
Drawing # **TFU-3S180-39**

EXHIBIT E - 2a





Proposal Number **1244:2:133357** Revision: **1**
 Date **25-Jun-03**
 Call Letters **WLEX-DT** Channel **39**
 Location **Lexington, KY**
 Customer
 Antenna Type **TFU-30DSC-R 3S180 DC**

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TFU-3S180-39**

EXHIBIT E - 2b

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.410	45	0.527	90	0.812	135	0.995	180	0.992	225	0.914	270	0.590	315	0.508
1	0.412	46	0.525	91	0.818	136	0.996	181	0.993	226	0.910	271	0.581	316	0.503
2	0.414	47	0.523	92	0.824	137	0.997	182	0.994	227	0.906	272	0.573	317	0.497
3	0.417	48	0.521	93	0.830	138	0.998	183	0.995	228	0.902	273	0.565	318	0.491
4	0.420	49	0.520	94	0.836	139	0.999	184	0.995	229	0.897	274	0.557	319	0.485
5	0.423	50	0.519	95	0.841	140	0.999	185	0.996	230	0.893	275	0.551	320	0.479
6	0.427	51	0.519	96	0.847	141	1.000	186	0.997	231	0.889	276	0.544	321	0.473
7	0.431	52	0.519	97	0.852	142	1.000	187	0.998	232	0.884	277	0.539	322	0.467
8	0.435	53	0.520	98	0.857	143	1.000	188	0.998	233	0.880	278	0.534	323	0.462
9	0.440	54	0.521	99	0.862	144	1.000	189	0.999	234	0.875	279	0.530	324	0.456
10	0.445	55	0.523	100	0.866	145	1.000	190	0.999	235	0.871	280	0.526	325	0.450
11	0.450	56	0.526	101	0.871	146	0.999	191	1.000	236	0.866	281	0.523	326	0.445
12	0.456	57	0.530	102	0.875	147	0.999	192	1.000	237	0.862	282	0.521	327	0.440
13	0.462	58	0.534	103	0.880	148	0.998	193	1.000	238	0.857	283	0.520	328	0.435
14	0.467	59	0.539	104	0.884	149	0.998	194	1.000	239	0.852	284	0.519	329	0.431
15	0.473	60	0.544	105	0.889	150	0.997	195	1.000	240	0.847	285	0.519	330	0.427
16	0.479	61	0.551	106	0.893	151	0.996	196	0.999	241	0.841	286	0.519	331	0.423
17	0.485	62	0.557	107	0.897	152	0.995	197	0.999	242	0.836	287	0.520	332	0.420
18	0.491	63	0.565	108	0.902	153	0.995	198	0.998	243	0.830	288	0.521	333	0.417
19	0.497	64	0.573	109	0.906	154	0.994	199	0.997	244	0.824	289	0.523	334	0.414
20	0.503	65	0.581	110	0.910	155	0.993	200	0.996	245	0.818	290	0.525	335	0.412
21	0.508	66	0.590	111	0.914	156	0.992	201	0.995	246	0.812	291	0.527	336	0.410
22	0.514	67	0.600	112	0.919	157	0.991	202	0.993	247	0.805	292	0.529	337	0.408
23	0.518	68	0.609	113	0.923	158	0.990	203	0.991	248	0.798	293	0.532	338	0.407
24	0.523	69	0.619	114	0.927	159	0.990	204	0.989	249	0.790	294	0.534	339	0.406
25	0.527	70	0.629	115	0.931	160	0.989	205	0.987	250	0.783	295	0.536	340	0.405
26	0.531	71	0.640	116	0.936	161	0.988	206	0.985	251	0.775	296	0.538	341	0.404
27	0.534	72	0.650	117	0.940	162	0.988	207	0.982	252	0.767	297	0.540	342	0.404
28	0.537	73	0.660	118	0.944	163	0.987	208	0.980	253	0.758	298	0.542	343	0.403
29	0.540	74	0.671	119	0.948	164	0.987	209	0.977	254	0.750	299	0.543	344	0.403
30	0.542	75	0.681	120	0.952	165	0.987	210	0.974	255	0.740	300	0.544	345	0.403
31	0.543	76	0.692	121	0.956	166	0.986	211	0.970	256	0.731	301	0.545	346	0.403
32	0.545	77	0.702	122	0.960	167	0.986	212	0.967	257	0.721	302	0.545	347	0.403
33	0.545	78	0.712	123	0.963	168	0.986	213	0.963	258	0.712	303	0.545	348	0.403
34	0.545	79	0.721	124	0.967	169	0.986	214	0.960	259	0.702	304	0.545	349	0.403
35	0.545	80	0.731	125	0.970	170	0.986	215	0.956	260	0.692	305	0.543	350	0.403
36	0.544	81	0.740	126	0.974	171	0.987	216	0.952	261	0.681	306	0.542	351	0.403
37	0.543	82	0.750	127	0.977	172	0.987	217	0.948	262	0.671	307	0.540	352	0.403
38	0.542	83	0.758	128	0.980	173	0.987	218	0.944	263	0.660	308	0.537	353	0.403
39	0.540	84	0.767	129	0.982	174	0.988	219	0.940	264	0.650	309	0.534	354	0.404
40	0.538	85	0.775	130	0.985	175	0.988	220	0.936	265	0.640	310	0.531	355	0.404
41	0.536	86	0.783	131	0.987	176	0.989	221	0.931	266	0.629	311	0.527	356	0.405
42	0.534	87	0.790	132	0.989	177	0.990	222	0.927	267	0.619	312	0.523	357	0.406
43	0.532	88	0.798	133	0.991	178	0.990	223	0.923	268	0.609	313	0.518	358	0.407
44	0.529	89	0.805	134	0.993	179	0.991	224	0.919	269	0.600	314	0.514	359	0.408



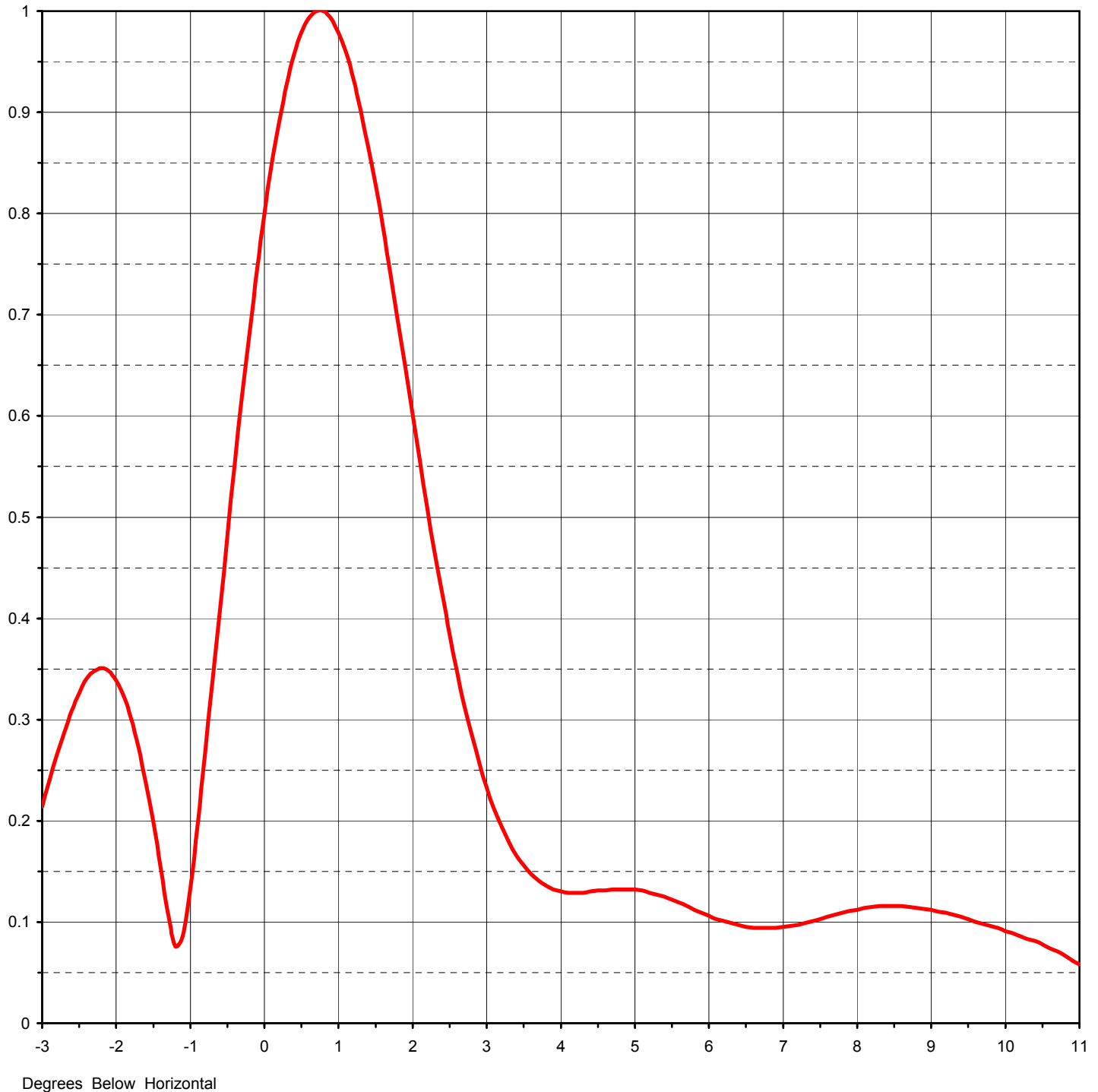
Proposal Number	1244:2:133357	Revision:	1
Date	25-Jun-03		
Call Letters	WLEX-DT	Channel	39
Location	Lexington, KY		
Customer			
Antenna Type	TFU-30DSC-R 3S180 DC		

ELEVATION PATTERN

RMS Gain at Main Lobe	22.00 (13.42 dB)
RMS Gain at Horizontal	14.00 (11.46 dB)
Calculated / Measured	Calculated

Beam Tilt	0.75 deg
Frequency	623.00 MHz
Drawing #	20Q22075L

EXHIBIT E - 2c





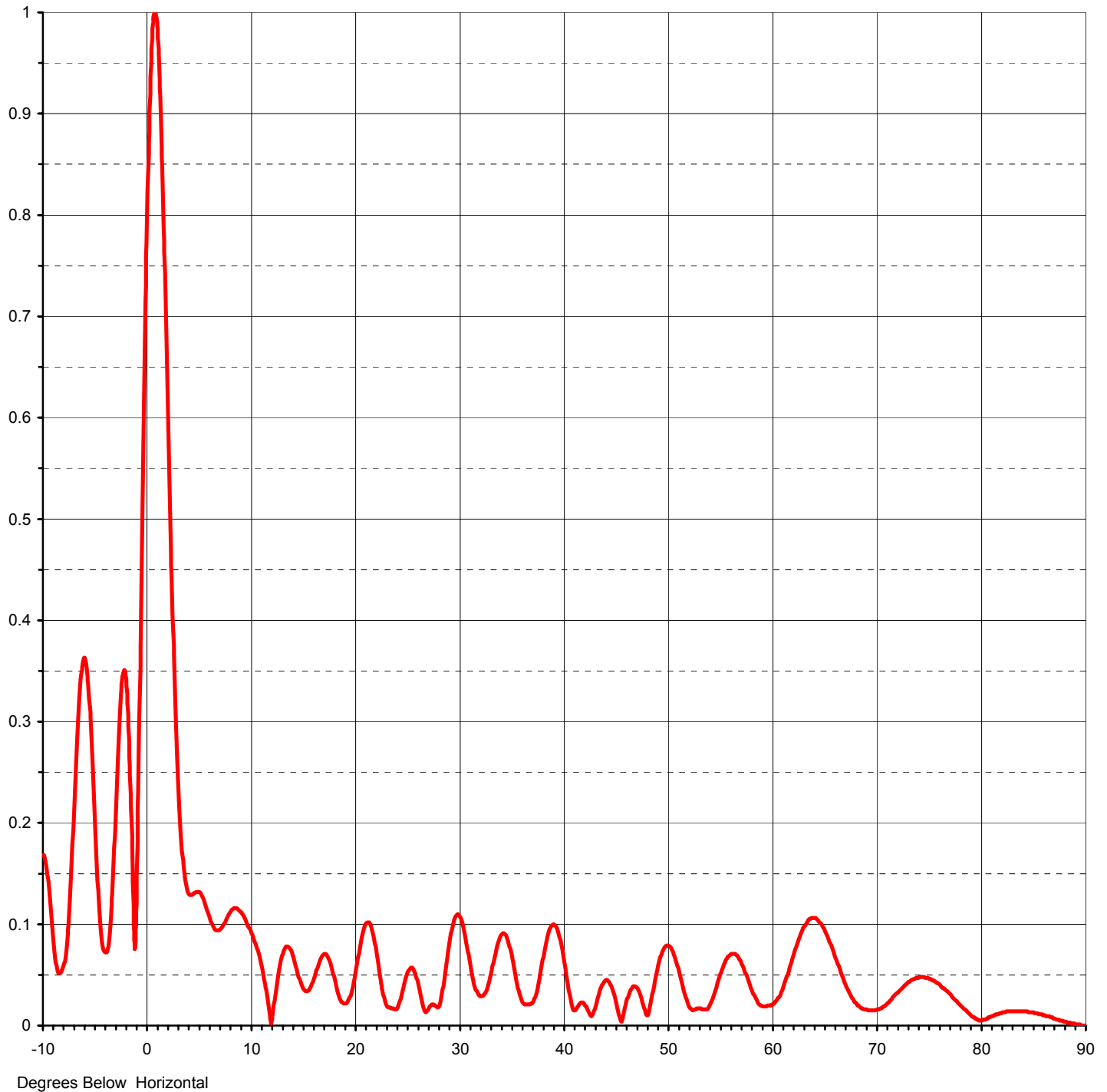
Proposal Number **1244:2:133357** Revision: **1**
Date **25-Jun-03**
Call Letters **WLEX-DT** Channel **39**
Location **Lexington, KY**
Customer
Antenna Type **TFU-30DSC-R 3S180 DC**

ELEVATION PATTERN

RMS Gain at Main Lobe **22.00 (13.42 dB)**
RMS Gain at Horizontal **14.00 (11.46 dB)**
Calculated / Measured **Calculated**

Beam Tilt **0.75 deg**
Frequency **623.00 MHz**
Drawing # **20Q22075L-90**

EXHIBIT E - 2d





Proposal Number **1244:2:133357** Revision: **1**
 Date **25-Jun-03**
 Call Letters **WLEX-DT** Channel **39**
 Location **Lexington, KY**
 Customer
 Antenna Type **TFU-30DSC-R 3S180 DC**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **20Q22075L-90**

EXHIBIT E - 2e

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.168	2.4	0.424	10.6	0.078	30.5	0.093	51.0	0.057	71.5	0.028
-9.5	0.144	2.6	0.348	10.8	0.071	31.0	0.065	51.5	0.037	72.0	0.033
-9.0	0.086	2.8	0.284	11.0	0.062	31.5	0.039	52.0	0.020	72.5	0.038
-8.5	0.052	3.0	0.233	11.5	0.035	32.0	0.029	52.5	0.015	73.0	0.043
-8.0	0.059	3.2	0.194	12.0	0.002	32.5	0.032	53.0	0.017	73.5	0.046
-7.5	0.107	3.4	0.166	12.5	0.038	33.0	0.048	53.5	0.016	74.0	0.047
-7.0	0.215	3.6	0.147	13.0	0.067	33.5	0.071	54.0	0.019	74.5	0.048
-6.5	0.322	3.8	0.136	13.5	0.078	34.0	0.088	54.5	0.032	75.0	0.046
-6.0	0.363	4.0	0.130	14.0	0.071	34.5	0.089	55.0	0.048	75.5	0.044
-5.5	0.314	4.2	0.129	14.5	0.053	35.0	0.072	55.5	0.062	76.0	0.040
-5.0	0.201	4.4	0.130	15.0	0.038	35.5	0.045	56.0	0.070	76.5	0.036
-4.5	0.100	4.6	0.131	15.5	0.034	36.0	0.025	56.5	0.071	77.0	0.031
-4.0	0.072	4.8	0.132	16.0	0.043	36.5	0.021	57.0	0.064	77.5	0.025
-3.5	0.102	5.0	0.132	16.5	0.059	37.0	0.022	57.5	0.051	78.0	0.020
-3.0	0.214	5.2	0.129	17.0	0.070	37.5	0.035	58.0	0.037	78.5	0.015
-2.8	0.265	5.4	0.125	17.5	0.066	38.0	0.063	58.5	0.026	79.0	0.010
-2.6	0.309	5.6	0.119	18.0	0.049	38.5	0.088	59.0	0.020	79.5	0.007
-2.4	0.340	5.8	0.112	18.5	0.029	39.0	0.100	59.5	0.019	80.0	0.005
-2.2	0.351	6.0	0.106	19.0	0.022	39.5	0.093	60.0	0.021	80.5	0.007
-2.0	0.339	6.2	0.101	19.5	0.027	40.0	0.069	60.5	0.025	81.0	0.009
-1.8	0.301	6.4	0.097	20.0	0.047	40.5	0.038	61.0	0.035	81.5	0.011
-1.6	0.238	6.6	0.094	20.5	0.077	41.0	0.015	61.5	0.050	82.0	0.013
-1.4	0.153	6.8	0.094	21.0	0.099	41.5	0.021	62.0	0.067	82.5	0.014
-1.2	0.076	7.0	0.095	21.5	0.100	42.0	0.022	62.5	0.083	83.0	0.014
-1.0	0.134	7.2	0.097	22.0	0.078	42.5	0.012	63.0	0.096	83.5	0.014
-0.8	0.266	7.4	0.101	22.5	0.045	43.0	0.016	63.5	0.104	84.0	0.014
-0.6	0.410	7.6	0.105	23.0	0.021	43.5	0.034	64.0	0.106	84.5	0.013
-0.4	0.552	7.8	0.109	23.5	0.017	44.0	0.044	64.5	0.102	85.0	0.013
-0.2	0.684	8.0	0.112	24.0	0.016	44.5	0.041	65.0	0.093	85.5	0.011
0.0	0.799	8.2	0.115	24.5	0.031	45.0	0.026	65.5	0.081	86.0	0.010
0.2	0.892	8.4	0.116	25.0	0.050	45.5	0.005	66.0	0.067	86.5	0.009
0.4	0.957	8.6	0.116	25.5	0.057	46.0	0.021	66.5	0.053	87.0	0.007
0.6	0.993	8.8	0.114	26.0	0.045	46.5	0.036	67.0	0.040	87.5	0.005
0.8	1.000	9.0	0.112	26.5	0.022	47.0	0.038	67.5	0.029	88.0	0.004
1.0	0.979	9.2	0.109	27.0	0.015	47.5	0.027	68.0	0.022	88.5	0.003
1.2	0.933	9.4	0.105	27.5	0.021	48.0	0.010	68.5	0.017	89.0	0.001
1.4	0.867	9.6	0.100	28.0	0.018	48.5	0.028	69.0	0.016	89.5	0.001
1.6	0.786	9.8	0.098	28.5	0.039	49.0	0.054	69.5	0.015	90.0	0.000
1.8	0.695	10.0	0.094	29.0	0.075	49.5	0.073	70.0	0.016		
2.0	0.601	10.2	0.089	29.5	0.103	50.0	0.079	70.5	0.018		
2.2	0.509	10.4	0.083	30.0	0.109	50.5	0.073	71.0	0.022		



EXHIBIT E - 2f

Proposal #: 1244:2:133357 Antenna Type: TFU-30DSC-R 3S180 DC Channel: 39 DTV
 Call Letters: WLEX-DT Location: Lexington, KY 40 DTV
 WTVQ-DT

Electrical Specifications		Value		Remarks
		Ratio	dB	
RMS Gain at Main Lobe over Halfwave Dipole	Hpol	22.0	13.42	D39; D40: 22.0 (13.42 dB)
	Vpol			
RMS Gain at Horizontal over Halfwave Dipole	Hpol	14.0	11.46	D39; D40: 14.0 (11.46 dB)
	Vpol			
Peak Directional Gain over Halfwave Dipole	Hpol	39.6	15.98	D39; D40: 39.6 (15.98 dB)
	Vpol			
Peak Directional Gain at Horizontal over Halfwave Dipole	Hpol	25.3	14.03	D39; D40: 25.3 (14.03 dB)
	Vpol			
Circularity		dB		
Axial Ratio		dB		
Beam Tilt		0.75 deg		D39; D40: 0.75 deg
Average Power	DTV	26 kW	14.15 dBk	+26 kW average DTV power
Antenna Input:	T/L	6-1/8 in	75.0 ohm	Type: EIA/DCA
Maximum Antenna Input VSWR		Channel 1.10 : 1		
				D40: Channel: 1.10 : 1
Patterns	Azimuth	TFU-3S180-39		D40: TFU-3S180-40
	Elevation	20Q22075L	20Q22075L-90	D39
		20Q22075H	20Q22075H-90	D40
Mechanical Specifications		Metric	English	Preliminary
Height with Lightning Protector	H4	m	ft	Side mounted
Height Less Lightning Protector	H2	16.0 m	52.5 ft	
Height of Center of Radiation	H3	8.0 m	26.3 ft	
Basic Wind Speed	V	112.7 km/h	70 mi/h	TIA/EIA-222-F.
Force Coeff. x Projected Area	CaAc	9.28 m ²	99.9 ft ²	Excludes Mounts
Moment Arm	D1	m	ft	
Force Coeff. x Projected Area	CaAc	m ²	ft ²	
Moment Arm	D3	m	ft	
Pole Bury Length	D2	m	ft	
Weight	W	1.2 t	2,600 lbs	Excludes Mounts
Radome				
Antenna designed in accordance with AISC specifications for design of structural steel for building as prescribed by TIA/EIA-222-F.				

NOTE:

Prepared By : SWB
 Original Date : 20-Jun-03

Revision: 1

Approved By :
 Rev. Date: 25-Jun-03

AJS



Proposal Number
Date
Call Letters
Location
Customer
Antenna Type

1244:2:133357
25-Jun-03
WTVQ-DT
Lexington, KY

Revision: **1**
Channel **40**

TFU-30DSC-R 3S180 DC

SYSTEM SUMMARY

EXHIBIT E - 2g

Antenna:

Type:	TFU-30DSC-R 3S180 DC	ERP:	1000 kW	(30.00 dBk)
Channel:	40	Peak Gain*:	39.6	(15.98 dB)
Location:	Lexington, KY	Input Power:	25.3 kW	(14.02 dBk)

Transmission Line:

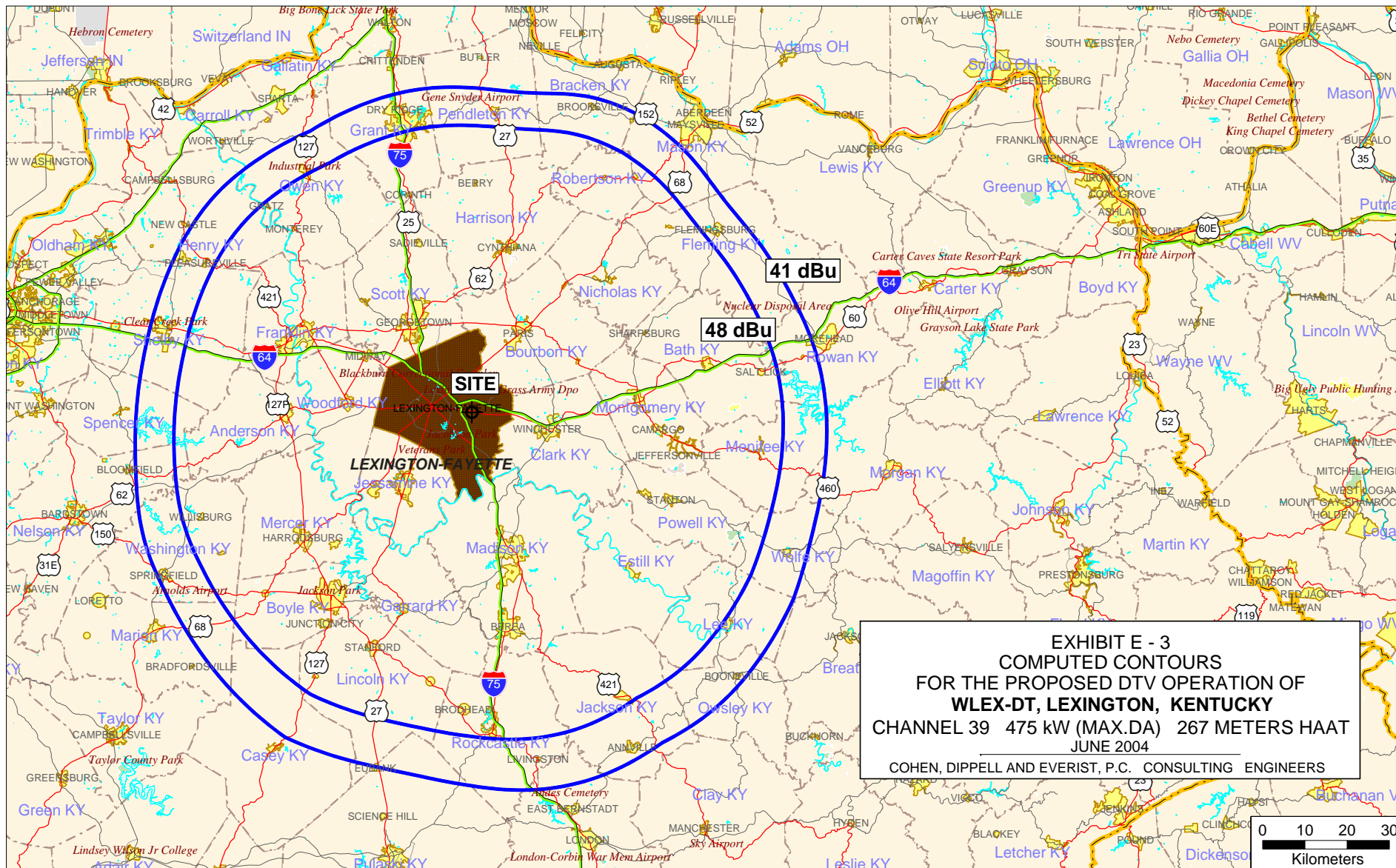
Type:	EIA/DCA	Attenuation:	1.23 dB
Size:	6-1/8 in	Efficiency:	75.3%
Impedance:	75 ohm		
Length:	1,000 ft		

Combiner:	DCA	Attenuation:	0.50 dB
		Efficiency:	89.1%

Combiner Input:

Power Required: **37.6 kW** **(15.75 dBk)**

* Gain is with respect to half wave dipole.



SECTION III-D - DTV Engineering

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

Certification Checklist: A correct answer of "Yes" to all of the questions below will ensure an expeditious grant of a construction permit. 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.

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 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 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
2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF 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:
- a.

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

TECHBOX

- 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 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.") ☐ Yes ☐ No

If "No," attach as an Exhibit justification therefor, 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 therefor. (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 radiofrequency 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.


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 Donald G. Everist		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date July 23, 2004	
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		

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).