

ENGINEERING REPORT  
RE MODIFICATION OF APPLICATION  
FOR CONSTRUCTION PERMIT  
FILE NO. BPCDT-19991027ABZ  
FOR A NEW DTV STATION  
**WTEN-DT, ALBANY, NEW YORK**  
CHANNEL 26 950 KW MAX ERP 310 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        )

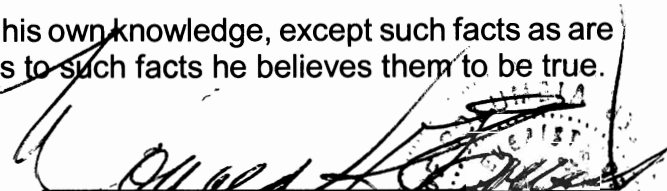
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

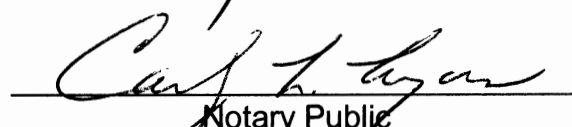
That the attached engineering report was prepared by him or under his supervision and direction and

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. 57140

Subscribed and sworn to before me this 27<sup>th</sup> day of July, 2004.



  
Notary Public

My Commission Expires: 2/28/2008

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington                     )  
  ) ss  
District of Columbia                 )

Martin R. Doczkat being duly sworn upon his oath, deposes and states that:

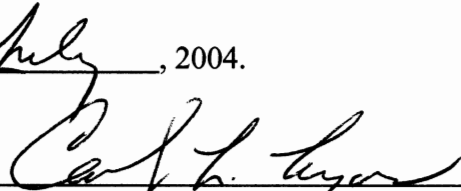
He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That 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.

  
\_\_\_\_\_  
Martin R. Doczkat

Subscribed and sworn to before me this 27<sup>th</sup> day of July, 2004.

  
\_\_\_\_\_  
Notary Public

My Commission Expires: 2/28/2008



### Introduction

This engineering report has been prepared on behalf of Young Broadcasting of Albany, Inc. (“Young”), licensee of TV station WTEN-TV, Albany, New York, in support of its amendment of application for a construction permit (FCC File No. BPCDT-19991027ABZ) for a new digital television (DTV) station. At present, WTEN-TV operates on analog TV Channel 10 (192-198 MHz) with 316 kW effective radiated power (ERP) and 305 meters antenna height above average terrain (HAAT). The current analog Channel 10 operation of WTEN-TV is with a directional TV antenna. Station WTEN-TV has been allotted Channel 26 (542-548 MHz) for its digital TV operation with 1000 kW maximum ERP and 305 meters HAAT. It is proposed to operate WTEN-DT on Channel 26 with a directional ERP of 950 kW at 310 meters HAAT. The proposed directional operation of WTEN-DT exceeds the FCC’s calculated radiation pattern for its allocated DTV operation. However, an interference study in accordance with OET Bulletin 69 was conducted to demonstrate that no harmful interference would be predicted to other stations.

### Antenna Site

It is proposed to replace the Channel 10 antenna with a top-mounted stacked antenna on the existing self-supporting tower. The proposed WTEN-DT, Channel 26 operation would be the upper antenna with the analog Channel 10 antenna mounted below (see Exhibit E-1). The tower also supports antennas for the FM station WFLY(FM) and television translator W58CX. The top portion of the existing tower will be reconfigured to accommodate the DTV antenna which will not result in a change in the overall height of the tower above ground level.

The radiation center of the current analog NTSC antenna of WTEN-TV will be unchanged.

The WTEN-TV antenna site is located on Beaver Dam Road, Helderberg Mountain, approximately 6 km west of Voorheesville, Albany County, New York.

The geographic coordinates (NAD-27) of the existing tower based on the Antenna Structure Registration No. 1035418 are as follows.

North Latitude: 42° 38' 14"

West Longitude: 73° 59' 55"

Since there is a change in the geographic coordinates of the existing antenna site, a map showing the site is being submitted with this application (Exhibit E-2).

The following data shows the pertinent information concerning the proposed DTV operation.

Antenna and Elevation Data\*

Antenna:	Harris	Model No. TWSC-20
	Beam Tilt	0.5 degrees electrical (Exhibit E-3)
Elevation of the site above mean sea level		466 meters
Elevation of the top of supporting structure above ground including DTV antenna		84 meters
Elevation of the top of supporting structure above mean sea level including DTV antenna		550 meters
Height of DTV antenna radiation center meters above ground		82 meters

Height of DTV antenna radiation center above mean sea level	548 meters
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Height of DTV antenna radiation center above average terrain	310 meters
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#### Allocation and Interference Analysis

The allotted maximum permissible ERP for WTEN-DT operation is 1000 kW and 305 meters HAAT. Station WTEN-DT is proposing to operate with an ERP of 950 kW and 310 meters HAAT using a directional transmitting antenna. Although the effective radiated power exceeds the Commission's allotted reference ERP in several directions, the attached OET Bulletin 69 interference study demonstrates the proposed directional operation would not cause objectionable interference to other domestic television stations. The analysis shows no harmful interference will result to co-channel analog station WHPX(TV), New London, Connecticut. The results of this study are shown in Table I. Canadian concurrence has been received as shown in Exhibit 1-A.

A study of predicted interference caused by the proposed WTEN-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 served. The model employs the Longley-Rice propagation methodology and evaluates in grid cells of approximately 4 km<sup>2</sup> 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 July 12, 2004, update of the FCC's engineering data base.

Table I lists the potential interferees which are to be considered according to the processing guidelines cited above. The last column of Table I shows the predicted new interference caused by the proposed WTEN-DT operation. None of the affected stations suffer more than 2% new interference from WTEN-DT.

#### 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 licensee will install filters or take other measures as necessary to resolve the problem.

#### Topographic Data

The average elevation data along each radial spaced ten degrees in azimuth radials plus a radial through the principal community from 3.2 to 16.1 kilometers are based on the NGDC 3-second computerized terrain data base.

### Contour Data

Utilizing the formula in Section 73.625(b)(2) for the effective heights shown on the attached tabulation, the depression angle  $A_h$ , for each azimuth has been calculated. The maximum radiation value has been used to calculate ERP where the vertical radiation pattern at these angles is greater than 90% of the maximum.

The distances along each radial to the limits of F(50,90) 48 and 41 dBu contours were determined from reference to the propagation data for Channels 14-69, as published by the Commission in Figure 10b, Section 73.699 of its rules.

The distances along the azimuth spaced every 10 degrees to the predicted F(50,90) 48 dBu and 41 dBu contours, the average elevations, and the effective antenna heights are included on the attached tabulation Table II. The predicted 48 dBu and 41 dBu contours determined from these distances is shown on the attached map (Exhibit E-4).

Therefore, the RFF study will consider the following stations:

WTEN-TV	Channel 10	NTSC Facility
WTEN-DT	Channel 26	DTV Facility
WFLY(FM)	Channel 222B	FM Facility
WGNA(FM)	Channel 299B	FM Facility
W58CX TX	Channel 58	TV Translator

The RF field contribution of each station will be calculated using the following formula:

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

where:

S = power density in  $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

ERP =  $[0.4 \text{ ERP}_V + \text{ERP}_A]$  for NTSC Stations

$\text{ERP}_V$  = peak visual ERP in watts

$\text{ERP}_A$  = RMS aural ERP in watts

### WTEN-TV NTSC Facility

Channel 10	Freq:	192-198 MHz range
	ERP =	316000 W
	Polarization =	Horizontal
	RCAGL -2 meters =	71 meters

WTEN-TV is using a typical broadcasting antenna. The field factor is assumed to be less than 0.2 at any angle greater than 45 degrees below the horizon. A value of 0.2 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 316 \text{ kW (Horizontal Only)}$$

$$R = 71 \text{ meters}$$

$$F = 0.2 \text{ (field factor)}$$

$$S = 8.53 \text{ uW}/\text{cm}^2 \quad S = 0.00853 \text{ mW}/\text{cm}^2$$

WTEN-TV contributes  $0.00853 \text{ mW}/\text{cm}^2$  at 2 meters above ground.

The limit for an uncontrolled environment is  $0.2 \text{ mW}/\text{cm}^2$  and the limit for a controlled environment is  $1.0 \text{ mW}/\text{cm}^2$  for a station broadcasting on 195 MHz.

Therefore:

WTEN-TV NTSC facility contributes 4.3% RFF for an uncontrolled environment two meters above ground or 0.9% RFF for a controlled environment two meters above ground at the tower site.

#### WTEN-DT DTV Facility

Channel 26	Freq:	542-548 MHz range
	ERP =	950000 watts
	Polarization =	Horizontal
	RCAGL -2 meters =	80 meters

WTEN-DT proposed to utilize Harris, Type TWSC-20 antenna with 0.5° electrical beam tilt. The manufacturer's vertical plane pattern for this antenna is included as Exhibit E-3. Based on this plot, the field factor will be less than 0.2 at any angle greater than 45 degrees below the horizon. A value of 0.2 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 950 \text{ kW (Horizontal Only)}$$

$$R = 80 \text{ meters}$$

$$F = 0.2 \text{ (field factor)}$$

$$S = 198.3 \text{ uW/cm}^2 \quad S = 0.198 \text{ mW/cm}^2$$

WTEN-DT contributes 0.198 mW/cm<sup>2</sup> at 2 meters above ground.

The limit for an uncontrolled environment is f/1500 and the limit for a controlled environment is f/300 for a station broadcasting on 545 MHz.

$$(545 \text{ MHz})/1500 = 0.363 \text{ mW/cm}^2 \text{ is the RFF limit for WTEN-DT when uncontrolled}$$

$$(545 \text{ MHz})/300 = 1.817 \text{ mW/cm}^2 \text{ is the RFF limit for WTEN-DT when controlled}$$

Therefore:

WTEN-DT DTV facility contributes 54.6% RFF for an uncontrolled environment and 10.9% RFF for a controlled environment two meters above ground at tower site

WFLY(FM) Facility

Channel 222B Freq: 92.1-92.5 MHz range  
ERP = 34000 watts  
Polarization = Horizontal + Vertical  
RCAGL -2 meters = 32 meters

WFLY(FM) assumed to have a field factor less than 0.3 at any angle greater than 45 degrees below the horizon. A value of 0.3 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 34 \text{ kW (H+V)}$$
$$R = 32 \text{ meters}$$
$$F = 0.3 \text{ (field factor)}$$

$$S = 99.8 \text{ uW/cm}^2 \quad S = 0.0998 \text{ mW/cm}^2$$

WFLY(FM) contributes 0.0998 mW/cm<sup>2</sup> at 32 meters above ground.  
The limit for an uncontrolled environment is 0.2 mW/cm<sup>2</sup> and the limit for a controlled environment is 1.0 mW/cm<sup>2</sup> for a station broadcasting on 92.3 MHz.

Therefore:

WFLY(FM) facility contributes 49.9% RFF for an uncontrolled environment two meters above ground and 10.0% RFF for a controlled environment two meters above ground at the tower site.

WGNA(FM) Facility

Channel 299B Freq: 107.5-107.9 MHz range  
ERP = 2500 watts  
Polarization = Horizontal + Vertical  
RCAGL -2 meters = 71 meters

WGNA(FM) is assumed to have a field factor less than 0.3 at any angle greater than 45 degrees below the horizon. A value of 0.3 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 25 \text{ kW (H+V)}$$

$$R = 71 \text{ meters}$$

$$F = 0.3 \text{ (field factor)}$$

$$S = 14.9 \text{ uW/cm}^2 \quad S = 0.0149 \text{ mW/cm}^2$$

WGNA(FM) contributes 0.0149 mW/cm<sup>2</sup> at 2 meters above ground.  
The limit for an uncontrolled environment is 0.2 mW/cm<sup>2</sup> and the limit for a controlled environment is 1.0 mW/cm<sup>2</sup> for a station broadcasting on 107.7 MHz.

Therefore:

WGNA(FM) facility contributes 7.5% RFF for an uncontrolled environment two meters above ground and 1.5% RFF for a controlled environment two meters above ground at the tower site

#### W58CX TX TV Translator

Channel 58	Freq:	734-740 MHz range
	ERP =	37500 watts
	Polarization =	Horizontal
	RCAGL -2 meters =	20 meters

W58CX-TX is using a typical broadcasting antenna. The field factor less than 0.2 at any angle greater than 45 degrees below the horizon. A value of 0.2 will be used in the calculation.

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 37.5 \text{ kW (H+V)}$$

$$R = 20 \text{ meters}$$

$$F = 0.2 \text{ (field factor)}$$

$$S = 125.3 \text{ uW/cm}^2 \quad S = 0.125 \text{ mW/cm}^2$$

W58CX-TX contributes 0.125 mW/cm<sup>2</sup> at 2 meters above ground. The limit for an uncontrolled environment is 0.491 mW/cm<sup>2</sup> and the limit for a controlled environment is 2.46 mW/cm<sup>2</sup> for a station broadcasting on 737 MHz.

Therefore:

W58CX-TV translator contributes 25.5% RFF for an uncontrolled environment two meters above ground or 5.1% RFF for a controlled environment two meters above ground at the tower site.

#### Total RFF at Site

The total RFF contribution for all transmitters under uncontrolled exposure limitations are calculated as follows:

$$\text{Total RFF} = 8.53 \text{ RFF} + 198.3 \text{ (DT) RFF} + 99.8 \text{ (FM) RFF} + 14.9 \text{ (FM) RFF} + 125.3 \text{ (TX) RFF} = 446.8 \mu\text{W}/\text{cm}^2$$

$$\text{Total RFF} = 4.3\% + 54.6\% + 49.9\% + 7.5\% + 25.5\% = 141.8\%$$

The total RFF contribution for all transmitters under controlled exposure limitations are calculated as follows:

$$\text{Total RFF} = 8.53 + 198.3 + 99.8 + 14.9 + 125.3 = 446.8 \mu\text{W}/\text{cm}^2$$

$$\text{Total RFF \%} = 0.9\% + 10.9\% + 10.0\% + 1.5\% + 5.1\% = 28.4\%$$

The licensee indicates that access to the site is located near Beaver Dam Road on Helderberg Mountain. It is believed this site qualifies under Situation C of OET Bulletin 65 as discussed below.

From Pages 77 and 78, guidance for such a situation is provided from the FCC publication entitled, *"Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, OET Bulletin 65, Edition 97-01, August 1997"*, *"Appendix B, Summary of 1986 Mass Media Bureau, Public Notice on RF Compliance"*.

A portion is abstracted as follows:

#### Situations

(C) High RF levels are produced at ground level in an area which could reasonably be expected to be used by the public (including trespassers).

- If the area of concern is fenced and marked by appropriate warning signs, an applicant can assume that there is no significant effect on the human environment with regard to exposure of the general public.

The tower site is fenced and the licensee will install signage around the tower to prevent unauthorized access. With respect to work performed on the tower, the licensee will establish procedures to ensure that workers are not exposed to RFF levels above those prescribed by the FCC by reducing or turning off the power, as appropriate. Therefore, members of the public and personnel working around the proposed facility would not be exposed to RFF levels exceeding the FCC standards.

#### Environmental Statement

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

- (a)(1) The proposed facilities located on an existing tower are not located in an officially designated wilderness area.
- (a)(2) The proposed facilities located on an existing tower are not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities located on an existing tower will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities located on an existing tower will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities 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 proposed facilities located on an existing tower are not located near any known Indian religious sites.
- (a)(6) The proposed facilities located on an existing tower 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) The existing tower lighting will remain unchanged.
- (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 inhibits access to the tower site.

EXHIBIT 1-A

CANADIAN CONCURRENCE

-2-

1. City, State: Syracuse, NY  
 2. Transmitter Location: 42-52-50 North Latitude  
 76-11-59 West Longitude  
 3. Call Sign: WNYS-DT  
 4. Channel Number: 44  
 5. Effective Radiated Power: 1000 kW  
 6. Height Above Average Terrain: 445 meters  
 7. Radiation Center Above Mean Sea Level: 799 meters  
 8. Antenna System: Directional  
 Make and Model: Dielectric TFU-31JSC C170  
 Polarization: Horizontal, 0.75° electrical beam tilt

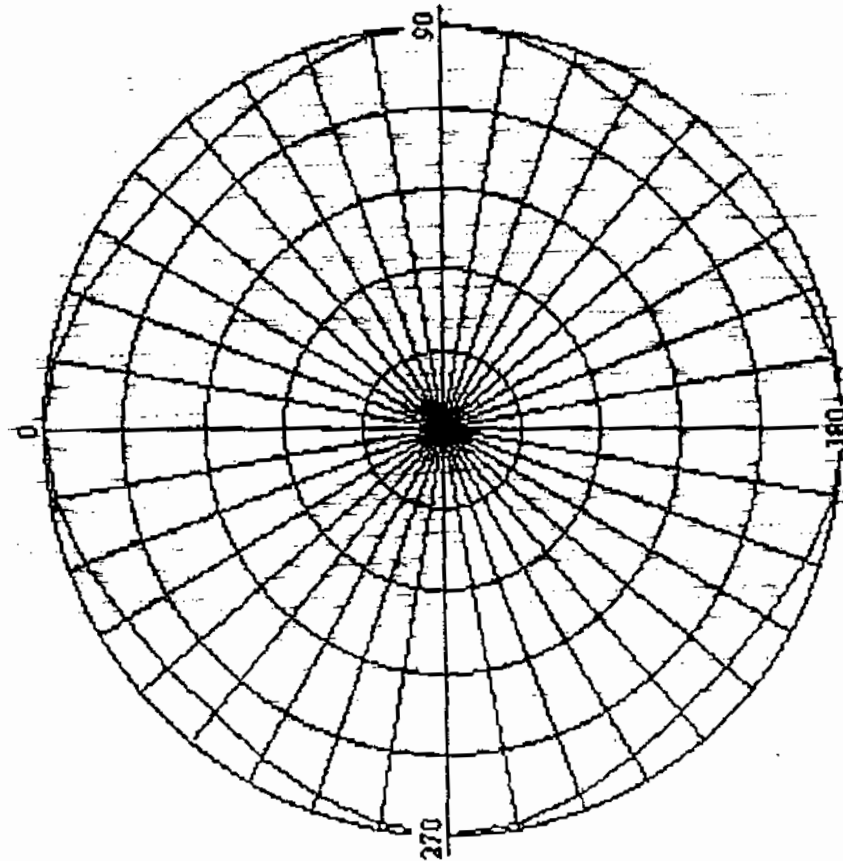
1. City, State: Erie, PA  
 2. Transmitter Location: 42-02-16 North Latitude  
 80-03-44 West Longitude  
 3. Call Sign: WSEE-DT  
 4. Channel Number: 16  
 5. Effective Radiated Power: 200 kW  
 6. Height Above Average Terrain: 279 meters  
 7. Radiation Center Above Mean Sea Level: 615 meters  
 8. Antenna System: Directional  
 Make and Model: Dielectric TLP 16-AC  
 Polarization: Horizontal, 1.0° electrical beam tilt and 1.0° mechanical beam tilt

1. City, State: Albany, NY  
 2. Transmitter Location: 42-38-14 North Latitude  
 73-59-55 West Longitude  
 3. Call Sign: WTEN-DT  
 4. Channel Number: 26  
 5. Effective Radiated Power: 950 kW  
 6. Height Above Average Terrain: 310 meters  
 7. Radiation Center Above Mean Sea Level: 548 meters  
 8. Antenna System: Directional  
 Make and Model: Harris TWSC-20  
 Polarization: Horizontal, 0.5° electrical beam tilt

1. City, State: Albany, NY  
 2. Transmitter Location: 42-37-00 North Latitude  
 74-00-45 West Longitude  
 3. Call Sign: WXXA-DT  
 4. Channel Number: 4  
 5. Effective Radiated Power: 8.1 kW  
 6. Height Above Average Terrain: 347 meters  
 7. Radiation Center Above Mean Sea Level: 614 meters  
 8. Antenna System: Directional  
 Make and Model: Dielectric TBF-03-2  
 Polarization: Horizontal, no electrical beam tilt

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*original accepted  
 MAY 2002*



DAP

HAR

TWSC-20

Aperture ID: 27394

ALBANY NY

WTER-PT

BRCDT-19991027ABZ

Outer circle is relative size 1.0 each division is 0.2.

22 May 2001



directional antenna calculations; Make: HAR Model: TWSC-20

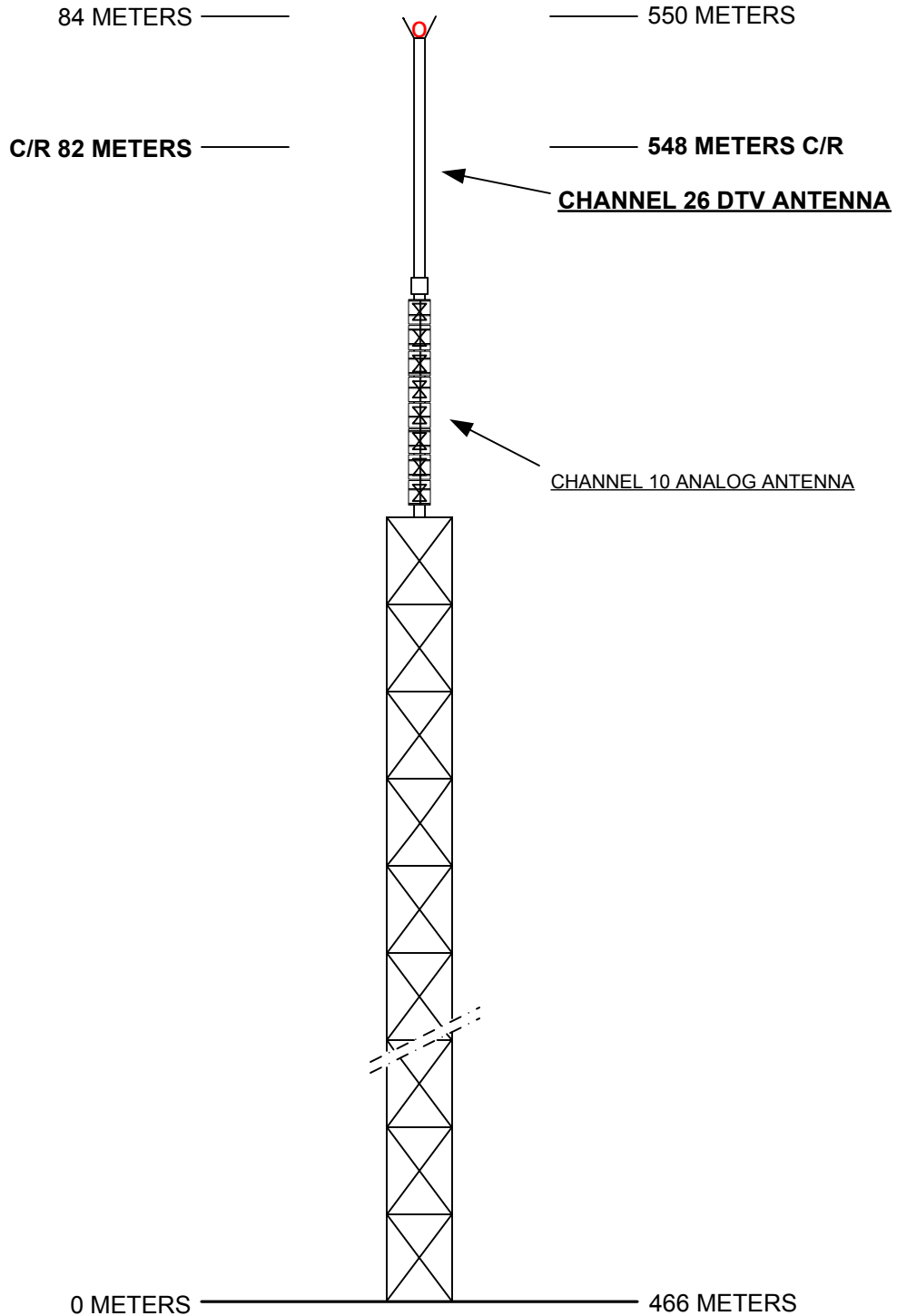
Antenna ID: 27894

Az.	Field	Az.	Field	Az.	Field	Az.	Field	Az.	Field	Az.	Field
1	0.928	70	0.988	20	0.959	30	0.928	40	0.91	50	0.91
0	0.928	70	0.959	80	0.988	90	1	100	0.988	110	0.959
20	0.928	130	0.91	140	0.91	150	0.928	160	0.959	170	0.988
30	0.928	190	0.988	200	0.959	210	0.928	220	0.91	230	0.91
40	0.928	250	0.959	260	0.988	270	1	280	0.988	290	0.959
50	0.928	310	0.91	320	0.91	330	0.928	340	0.959	350	0.988

Albany, NY Channel 26

ABOVE GROUND

ABOVE MEAN SEA LEVEL



NOT TO SCALE

EXHIBIT 1  
VERTICAL SKETCH  
FOR THE PROPOSED  
DTV CHANNEL 26 OPERATION OF  
**WTEN-DT, ALBANY, NEW YORK**  
JULY 2004

COHEN, DIPPELL AND EVERIST, P. C.

TABLE I  
LONGLEY-RICE ANALYSIS FOR THE  
PROPOSED OPERATION OF  
WTEN-DT, ALBANY, NEW YORK  
CHANNEL 26 950 KW (MAX ERP) 310 METERS HAAT  
JULY 2004

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>Application</u>	<u>Ref. No.</u>	<u>Result</u>
18	WUVN	HARTFORD CT	137.5	LIC	BLCT	MONKTON VT	No Interference
18	W12BZ	UTICA NY	111.3	APP	BMAPTTA	-20030619AAY	No Interference
19	WCDC-TV	ADAMS MA	67.9	LIC	BLCT	-19810105KE	0.0%
19	W19BR	MONKTON VT	198.2	LIC	BLTTL	-19990811JG	0.0%
19	W19BR	MONKTON VT	197.4	APP	BPTTA	-20040310ACW	0.0%
22	WWLP	SPRINGFIELD MA	122.8	LIC	BLCT	-19841128KJ	No Interference
22	WWLP	SPRINGFIELD MA	122.8	CP MOD	BPCT	-19930826KE	No Interference
23	WXXA-TV	ALBANY NY	2.6	LIC	BLCT	-20020314ABC	0.1%
24	WEDH	HARTFORD CT	137.3	LIC	BLET	-341	No Interference
25	WCNY-TV	SYRACUSE NY	176.3	LIC	BLEDT	-20030411ABY	No Interference
25	WCNY-DT	SYRACUSE NY	168.7	PLN	DTVPLN	#NAME?	No Interference
25	W25AT	TUPPER LAKE NY	173.5	LIC	BLTT	-19930127ID	No Interference
25	WNNE	HARTFORD VT	153.9	CP	BPCDT	-19991101AEW	0.1%
25	WNNE-DT	HARTFORD VT	154.2	PLN	DTVPLN	#NAME?	0.0%
25	W25BT	MONKTON VT	189.9	LIC	BLTT	-19930827JP	No Interference
26	WHPX	NEW LONDON CT	201.1	LIC	BLCT	-19860924KI	0.9%
26	WHDN-LP	BOSTON MA	242.9	LIC	BLTTL	-20031231AAX	No Interference
26	WMEA-TV	BIDDEFORD ME	273.7	LIC	BLET	-379	0.3%
26	WMEA-TV	BIDDEFORD ME	273.6	CP	BPET	-20020814ABO	0.1%
26	W26CQ	COLEBROOK NH	333.7	CP MOD	BMPTT	-20031203AFW	No Interference
26	W26BS	BINGHAMTON NY	172.4	LIC	BLTT	-19971110IR	0.0%
26	W26CY	CANISTEO AND HORNELL NY	300.8	CP	BNPTT	-20000823AGA	No Interference
26	W26BF	ELMIRA NY	235.9	LIC	BLTTL	-19960111AB	No Interference
26	W27CB	HEMPSTEAD NY	210.4	CP MOD	BMPTTL	-20010130AAW	No Interference
26	WNXY-LP	NEW YORK NY	210.1	LIC	BLTTL	-20020923ACF	0.0%
26	W26CE	NEW YORK NY	213.2	LIC	BLTTL	-20010927ABF	0.0%
26	W26DB	PORT JERVIS NY	153	CP	BNPTTL	-20000831AND	No Interference
26	W26CP	POTSDAM NY	238.1	CP	BNPTT	-20000830AWA	No Interference
26	WNGN-LP	TROY NY	34.4	LIC	BLTTL	-19981015JP	0.3%

TABLE I  
LONGLEY-RICE ANALYSIS FOR THE  
PROPOSED OPERATION OF  
WTEN-DT, ALBANY, NEW YORK  
CHANNEL 26 950 KW (MAX ERP) 310 METERS HAAT  
JULY 2004

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>Application</u>	<u>Ref. No.</u>	<u>Result</u>
26	W26BZ	VICTOR NY	282.6	LIC	BLTTL	-20000306AAM	No Interference
26	W26CV	MANSFIELD PA	260	CP	BNPTT	-20000830BAZ	No Interference
26	KYW-TV	PHILADELPHIA PA	306.5	CP	BPCDT	-19980408KE	0.1%
26	KYW-DT	PHILADELPHIA PA	306.3	PLN	DTVPLN	#NAME?	0.0%
26	W26CD	SCRANTON PA	190.6	LIC	BLTT	-20020726AAP	No Interference
26	W26AT	WILLIAMSPORT PA	294.5	LIC	BLTT	-19900918IP	No Interference
27	W27CD	STAMFORD CT	178.9	LIC	BLTTL	-19990325JB	No Interference
27	WUNI	WORCESTER MA	190.1	LIC	BLCT	-19991214ABC	No Interference
27	W27AL	MONTICELLO NY	122.5	LIC	BLTTL	-19940207JF	No Interference
27	WTBY-TV	POUGHKEEPSIE NY	127.7	LIC	BLCDD	-20030930ACY	0.3%
27	WTBY-DT	POUGHKEEPSIE NY	102	PLN	DTVPLN	#NAME?	0.0%
27	WVVC-LP	UTICA NY	106.5	LIC	BLTTL	-19960322JA	No Interference
27	WFXV	UTICA NY	126	APP	BPCDT	-19991029AIE	0.0%
27	WFXV-DT	UTICA NY	125.9	PLN	DTVPLN	#NAME?	0.0%
27	W27CP	WHITE RIVER JUNCTION VT	185.8	CP MOD	BMPTT	-20031211ABG	No Interference
28	W28CT	HARTFORD CT	119.1	CP	BPTTL	-20021112AAX	No Interference
28	WHTX-LP	HARTFORD CT	141.4	APP	BPTVL	-19980601JZ	No Interference
28	WVER	RUTLAND VT	134.6	LIC	BLET	-19930715KJ	No Interference
29	W29BJ	BURLINGTON NY	94.1	LIC	BLTTL	-19970324JC	No Interference
30	WVIT	NEW BRITAIN CT	141.7	LIC	BLCT	-19791113LC	No Interference
30	W30AZ	LIBERTY NY	114.8	LIC	BLTT	-19911028IF	No Interference
33	WFXV	UTICA NY	125.9	LIC	BLCT	-19970220KE	No Interference
34	WESA-LP	SPRINGFIELD MA	122.8	CP	BPTTL	-20031119AIE	No Interference

TABLE II  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WTEN, ALBANY, NEW YORK  
CHANNEL 26 950 KW ERP (MAX DA) 310 METERS HAAT  
JULY 2004

<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>	<u>ERP</u> kW	<u>Distance to Contour F(50,90)</u>	
					<u>48 dBu</u> <u>City Grade</u> km	<u>41 dBu</u> <u>Noise-Limited</u> km
0	98	450	0.588	950.0	94.8	110.1
10	99	449	0.587	927.3	94.5	109.7
20	101	447	0.586	873.7	93.9	108.9
30	100	448	0.586	818.1	93.5	108.3
40	96	452	0.589	786.7	93.4	108.3
50	100	448	0.586	786.7	93.2	107.9
60	92	456	0.592	818.1	94.0	109.0
70	78	470	0.601	873.7	95.5	110.8
80	76	472	0.602	927.3	96.2	111.6
85	79	469	0.600	938.6	96.1	111.5
90	80	468	0.599	950.0	96.1	111.5
100	85	463	0.596	927.3	95.6	111.0
110	89	459	0.593	873.7	94.8	110.0
120	108	440	0.581	818.1	92.9	107.7
130	136	412	0.562	786.7	91.0	104.8
140	135	413	0.563	786.7	91.0	104.9
150	213	335	0.507	818.1	85.5	98.7
160	273	275	0.459	873.7	79.1	92.3
170	320	228	0.418	927.3	75.2	86.4
180	337	211	0.402	950.0	74.1	84.7
190	408	140	0.328	927.3	68.7	77.5
200	426	122	0.306	873.7	66.9	75.5
210	458	90	0.263	818.1	63.2	71.2
220	477	71	0.233	786.7	60.1	67.7

TABLE II  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
WTEN, ALBANY, NEW YORK  
CHANNEL 26 950 KW ERP (MAX DA) 310 METERS HAAT  
JULY 2004  
(continued)

<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>	<u>ERP</u> kW	<u>Distance to Contour F(50,90)</u>	
					<u>48 dBu</u> <u>City Grade</u> km	<u>41 dBu</u> <u>Noise-Limited</u> km
230	454	94	0.269	786.7	63.6	71.6
240	438	110	0.291	818.1	65.5	73.9
250	408	140	0.328	873.7	68.3	77.1
260	364	184	0.376	927.3	72.1	81.6
270	361	187	0.379	950.0	72.4	82.2
280	390	158	0.348	927.3	70.1	79.2
290	405	143	0.331	873.7	68.6	77.4
300	405	143	0.331	818.1	68.3	77.0
310	362	186	0.378	786.7	71.4	80.6
320	310	238	0.427	786.7	75.1	86.1
330	271	277	0.461	818.1	78.9	91.9
340	178	370	0.533	873.7	89.2	102.3
350	124	424	0.570	927.3	92.9	107.6
Average	468					

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

DTV Channel 26 (542-548 MHz)  
Average Elevation 3.2 to 16.1 km 548 meters AMSL  
Center of Radiation 548 meters AMSL  
Antenna Height Above Average Terrain 310 meters  
Effective Radiated Power 950 kW (29.78 dBk) Max.

North Latitude: 42° 38' 14"  
West Longitude: 73° 59' 55"  
(NAD-27)

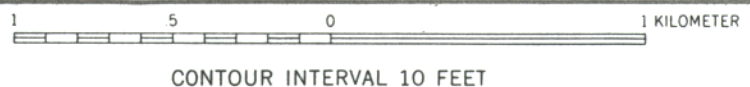


**SITE COORDINATES:**  
(NAD-27)  
N. 42° 38' 14"  
W. 73° 59' 55"

VOORHEESVILLE QUADRANGLE  
NEW YORK—ALBANY COUNTY  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
NW 1/4 ALBANY 15' QUADRANGLE

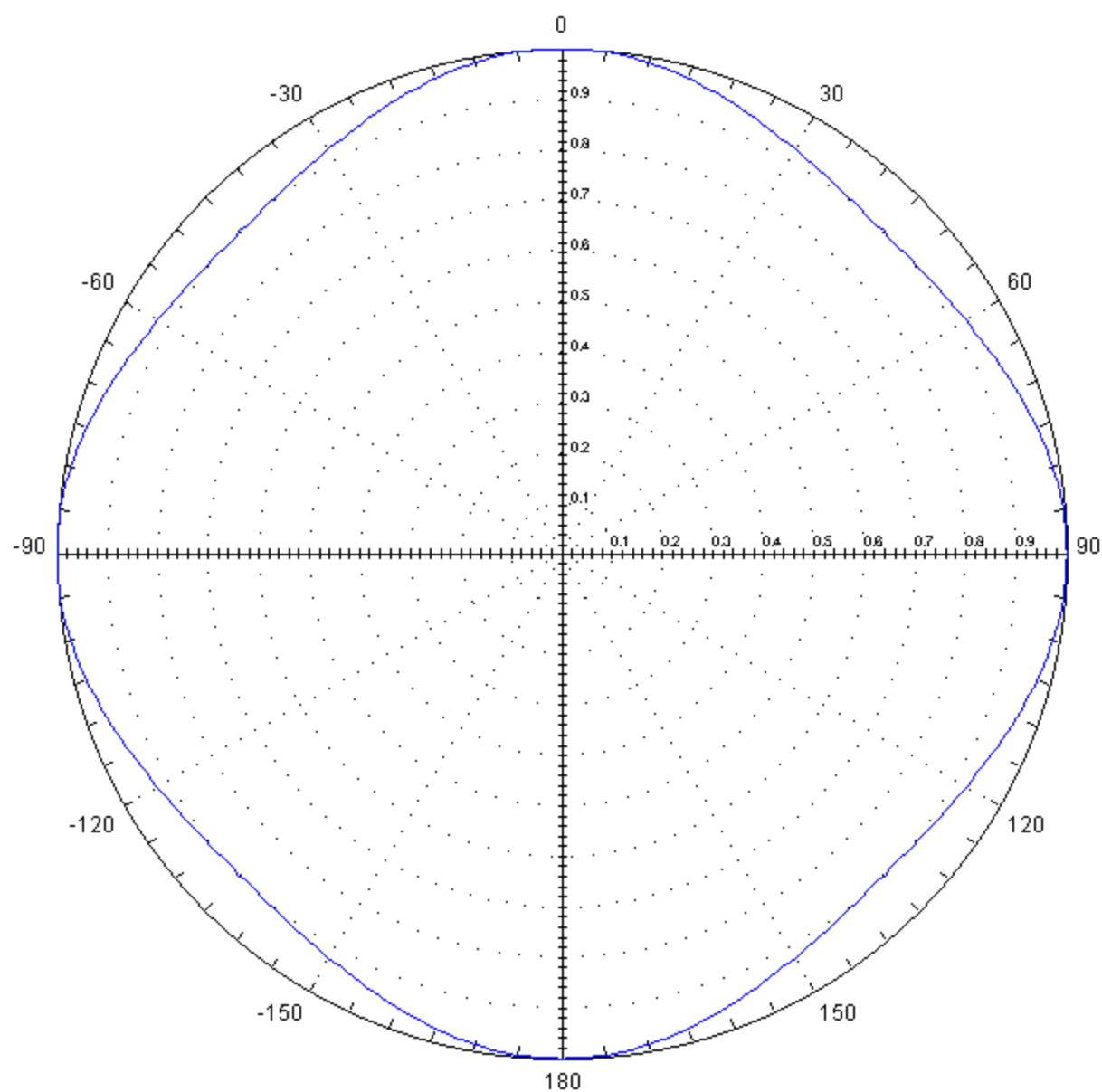
**EXHIBIT 2**  
**ANTENNA SITE**  
**FOR THE PROPOSED DTV OPERATION OF**  
**WTEN-DT, ALBANY, NEW YORK**  
JULY 2004

**COHEN, DIPPELL AND EVERIST, P.C.** Consulting Engineers





### Calculated Relative Field

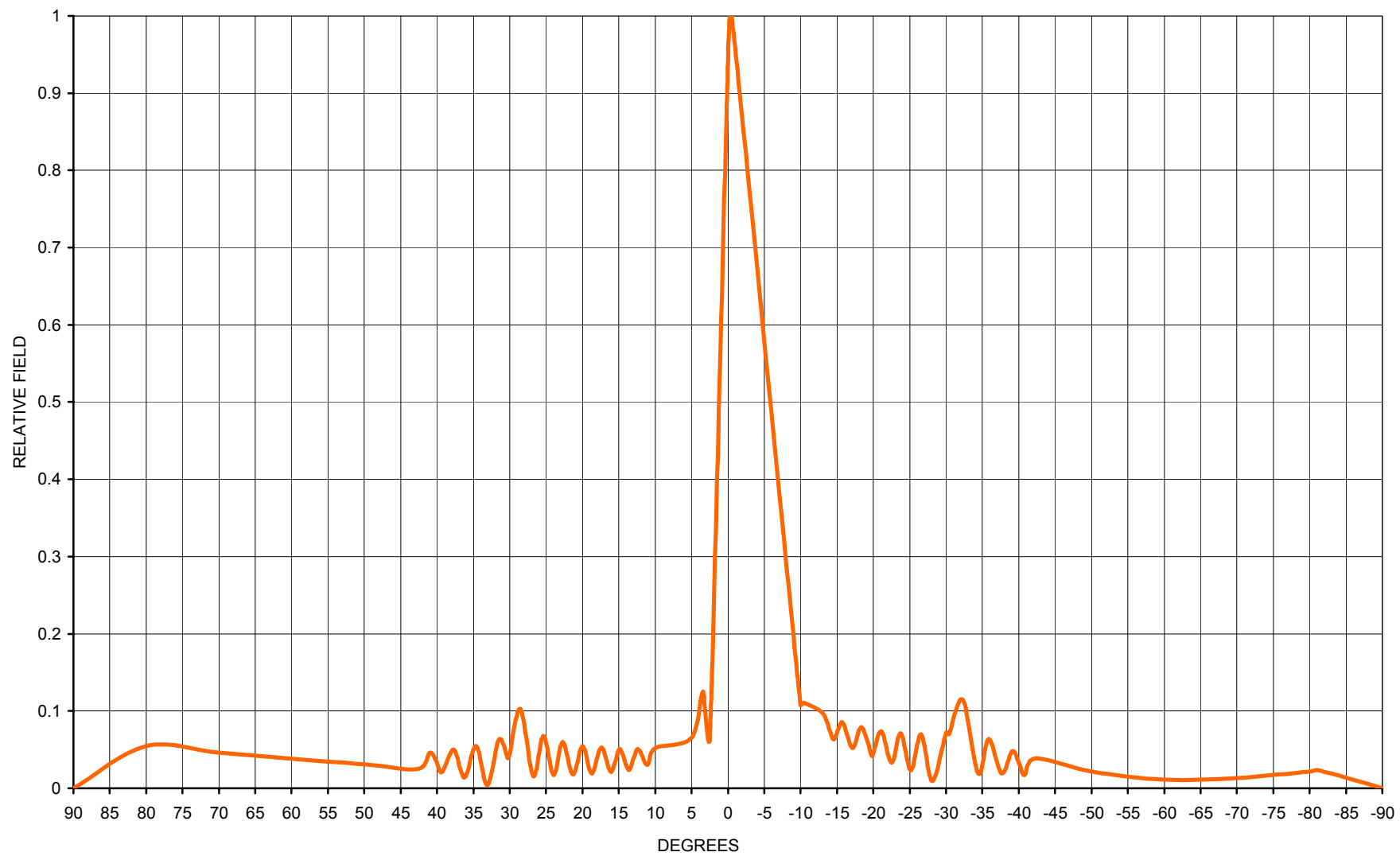


Harris Pattern No.: 9286A01S  
Model: TWSC-20

EXHIBIT E-3b  
TABULATION OF  
RELATIVE FIELD VALUE FOR  
HARRIS TWSC-20  
WTEN-DT, ALBANY, NEW YORK  
JULY 2004

<u>Azimuth</u> N ° E, T	<u>Relative</u> <u>Field</u>	<u>Azimuth</u> N ° E, T	<u>Relative</u> <u>Field</u>	<u>Azimuth</u> N ° E, T	<u>Relative</u> <u>Field</u>
0	1.000	130	0.906	231	0.905
10	0.988	133	0.900	240	0.925
20	0.957	135	0.903	250	0.957
30	0.925	137	0.900	260	0.988
39	0.905	140	0.906	270	1.000
40	0.906	141	0.905	280	0.988
43	0.900	150	0.925	290	0.957
45	0.903	160	0.957	300	0.925
47	0.900	170	0.988	309	0.905
50	0.906	180	1.000	310	0.906
51	0.905	190	0.988	313	0.900
60	0.925	200	0.957	315	0.903
70	0.957	210	0.925	317	0.900
80	0.988	219	0.905	320	0.906
90	1.000	220	0.906	321	0.905
100	0.988	223	0.900	330	0.925
110	0.957	225	0.903	340	0.957
120	0.925	227	0.900	350	0.988
129	0.905	230	0.906		

ELEVATION PATTERN FOR HARRIS TWSC-20





# TV Antenna Specification Summary



## I. General Information

Specification No.: D-12329D-01	Antenna Model No.: TWSC-20	Rev: A
Customer: WTEN	Ant. Configuration : Topmount	Date: 13 Oct 1999
Location: Albany, NY	Prepared by: SRR	Page: 1 of 1
Filename: C:\DOCUME~1\SteveB\LOCALS~1\Temp\12329DSpecifications.xls]		

## II. Mechanical Specifications

	English	Metric	Remarks
Overall height of antenna:	48.7 ft	(14.84 m)	Includes standard 4' lightning rods
Radiation center:	22.3 ft	(6.8 m)	Topmount on customer supplied tower
Input connection:	6-1/8"		Single 75 $\Omega$ EIA flanged input
Moment (M):	56,000 ft-lbs	(75,925 N-m)	Loads calculated per EIA-222C @ 50
Shear (S):	2,440 lbs	(10,854 N)	PSF, no ice.
Equivalent moment arm ( $M_a$ ):	23.7 ft	(7.22 m)	Per EIA-222F with $C_F=.059$ from table #1.
Equivalent effective area ( $C_F A_C$ ):	49.6 ft <sup>2</sup>	(4.61 m <sup>2</sup> )	No ice.
Weight:	4,900 lbs	(2,223 kg)	Calculated. No ice.

## III. Electrical Specifications

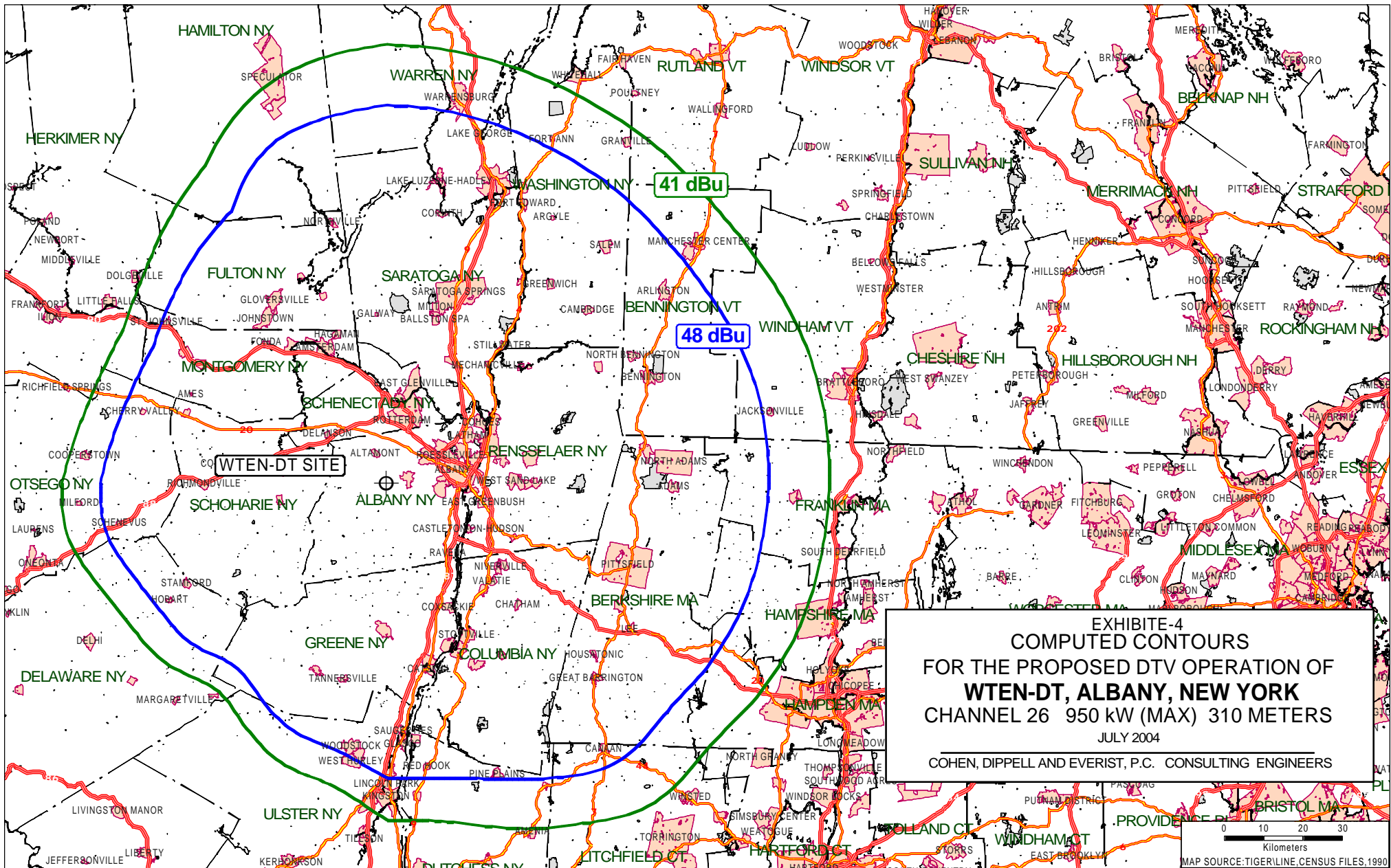
	Ratio	dB	Remarks
Channel:	26		542 - 548 MHz
Beam Tilt:	-0.5°		
Null Fill (first):	25.0%		
Number of sections (bays):	0		
Polarization:	Horizontal		
<b>Elevation peak power gain:</b>	<b>20.1</b>	<b>13.0 dB</b>	Relative to dipole
El. gain @ horizontal:	18.1	12.6 dB	0.949 field @ 0°
<b>Azimuthal power gain:</b>	<b>1.1</b>	<b>0.4 dB</b>	
Horizontal plane maximum gain:	20.1	13.0 dB	
Horizontal plane minimum gain:	16.2	12.1 dB	0.90 min. field
Circularity:			Calculated. $\pm 1.0$ dB or better
<b>Channel 26 maximum antenna gain:</b>	<b>22.3</b>	<b>13.5 dB</b>	Peak gain
Channel 26 azimuthal pattern number:	9286A01S		Calculated
Channel 26 elevation pattern number:	CE242-01		Calculated
Total average power rating:	58.0 kW	17.6 dBk	With inner conductor @ 100° C
Total peak power rating:	273.0 kW	24.4 dBk	With ambient temperature @ 40° C

## IV. ERP Estimate

	Ratio	dB	Remarks
<b>Total transmission line efficiency &amp; loss:</b>	<b>0.79</b>	<b>-1.01 dB</b>	Estimate
Transmission line loss per length:	-0.101 dB/100 ft		Estimate for 6 1/8" 75 $\Omega$ rigid line
Transmission line length:	1,000 ft		Estimated length
<b>Combiner, splitter &amp; RF system eff. &amp; loss</b>	<b>1.00</b>	<b>0.0 dB</b>	Single channel operation
<b>Total system gain for channel 26:</b>	<b>17.6</b>	<b>12.5 dB</b>	Estimate
<b>Channel 26 desired ERP:</b>	<b>1000.0 kW</b>	<b>30.0 dBk</b>	
<b>Channel 26 required TPO:</b>	<b>56.7 kW</b>	<b>17.5 dBk</b>	Estimate

## V. Notes

1. Due to a continuous program of improvements, specifications are subject to change without notice.
2. Weights are estimated only. Actual weight may vary and will be provided prior to shipment.
3. Antenna gains are relative to half-wave dipole.
4. Last modified 1 September 1999 - JRR



## 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

# 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 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.**

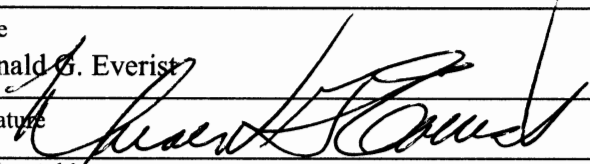
I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular 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 28, 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).