

ENGINEERING STATEMENT  
RE REQUEST FOR MODIFICATION OF  
CONSTRUCTION PERMIT  
TO OPERATE DTV STATION  
**KVRR-DT, FARGO, NORTH DAKOTA**  
CHANNEL 19 1000 KW (MAX) ERP 348 METERS HAAT

DECEMBER 2006

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 )

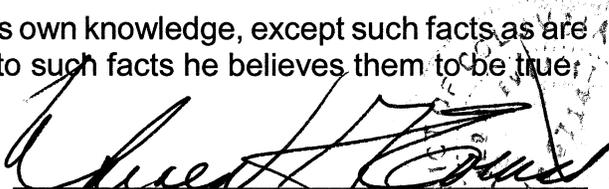
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

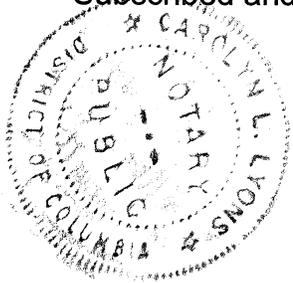
That his qualifications are a matter of record in the Federal Communications Commission;

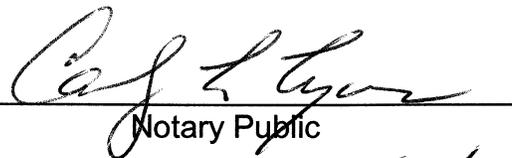
That the attached engineering report was prepared by him or under his supervision and direction and

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 27<sup>th</sup> day of December, 2006.



  
Notary Public

My Commission Expires: 2/28/2008

Introduction

This engineering statement has been prepared on behalf of Red River Broadcast Co., LLC (“Red River”) licensee of TV station KVRR(TV), Fargo, North Dakota, in support of its request to modify the outstanding construction permit (FCC File No. BPCDT-19991028ACA) for Digital Television (“DTV”) operation. Red River currently operates its NTSC facility on Channel 15 with an effective radiated power (“ERP”) of 4170 kilowatts and an antenna height above average terrain (“HAAT”) of 379 meters. Furthermore, Red River has been allotted Channel 19 for its DTV facility and has a current construction permit (FCC File No. BPCDT-19991028ACA) for Channel 19 at 1000 kilowatts Max ERP and 379 meters HAAT. This modification request proposes that KVRR-DT operate side-mounted on the tower proposed in the current construction permit but at a slight HAAT reduction of 348 meters and 1000 kilowatts Max ERP. However, this proposal still satisfies all of the current technical requirements for a DTV operation.

Antenna Site

The proposed operation will transmit from the KVRR(TV) main transmitting tower (Exhibit E-1) that has FCC Antenna Structure Registration No.1049364. The tower is located 1.6 kilometers north and 0.5 km east of the intersection of Highway 32 and Highway 34 and is further described by the geographic coordinates listed below.

North Latitude: 46° 40' 29"

West Longitude: 96° 13' 40"

(NAD-27)

This proposed site is the same as specified in the outstanding construction permit. However, due to the slight reduction of height, the proposed facilities will not extend the predicted 41 dBu contour, in any direction, beyond that authorized by the outstanding

construction permit. Furthermore, the proposed tower site is the same as that utilized for the current NTSC operation mounted at the tower top.

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

Antenna Data

Antenna:	Dielectric	Model No. TFU-24DSC-R P290	
	Beam Tilt	0.75° electrical	
	Directional Power Gain	55.1	17.41 dB
		(per Exhibits E-2a and E-2b Section 73.625c)	

Power Data

Transmitter output	25.35 kW	14.04 dBk
Dielectric waveguide combiner efficiency/loss	97.7%	0.1 dB
Transmission line efficiency/loss Dielectric, Type EIA/DCA 6-1/8", 75 ohm 1060 feet (323.1 meters)	76.7%	1.15 dB
Dielectric coax splitter at antenna	95.5%	0.2 dB
Input power to the antenna	18.1 kW	12.59 dB
Antenna power gain, Main Lobe	55.1	17.41 dB
Effective Radiated Power, Maximum	1000 kW	30 dBk

Elevation Data

Elevation of the site above mean sea level:	443.2 meters (1454.4 feet)
Elevation of the top of existing supporting structure above ground including appurtenances	335.5 meters (1100.8 feet)
Elevation of the top of supporting structure above mean sea level including appurtenances	778.7 meters (2555.2 feet)

Height of DTV antenna radiation center meters above ground	292.6 meters (960 feet)
Height of DTV antenna radiation center above mean sea level	735.8 meters (2414.4 feet)
Height of DTV antenna radiation center above average terrain	348 meters (1141.7 feet)

#### Authorized Effective Radiated Power

The maximum ERP authorized in the current construction permit for the DTV operation is 1000 kilowatts. Red River is proposing to operate this facility until post-transition with a maximum ERP of 1000 kW. As stated previously, operating at this slightly reduced height will ensure that the 41 dBu contour of the proposed operation does not extend beyond the 41 dBu protected contour authorized by the current construction permit in any direction. After post-transition, it is envisioned that the current side-mounted NTSC antenna will be removed and the DTV antenna will be reinstalled at this upper location.

#### Principal Community Coverage

In MM Docket No. 00-39, the Commission adopted rules to require DTV stations to place a stronger TV signal over the principal community. The proposed operation proposed by KVRR-DT places a predicted 48 dBu contour over the community of Fargo, North Dakota.

#### Topographic Data

The average elevation data has been determined based on the original of the eight cardinal radials from 3.2 to 16.1 kilometers and subtracting the difference between the current NTSC licensed radiation center and the proposed DTV radiation center.

#### 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.

Table I provides the distances beginning at true north at every 10 degrees in azimuth angle along the radials to the predicted F(50,90) 48 dBu and 41 dBu proposed contours, the average elevations, and the effective antenna heights. Exhibit E-4 provides a map depicting the predicted contours for the proposed operation.

The distances along each radial to the limits of F(50,90) 48 dBu and 41 dBu contours were determined as specified in Section 73.625(b) by reference to the propagation data for Channels 14-69, as published by the Commission in Figures 10b and 10c, Section 73.699 of its rules.

#### Other Stations

According to the Commission's Consolidated Database System, dated November 29, 2006 there is one licensed FM station, KRVI(FM), within 500 meters of the KVRR-DT tower site. According to technical personnel at the KVRR-DT tower site, KRVI(FM) is no longer operating in the vicinity of this tower and will therefore not be considered in the next section. Aside from KVRR(TV), no other TV transmitters operating within 500 meters of the tower. There are no AM stations within 3.22 km of the proposed operation.

#### Environmental Statement

The following provides a detailed analysis of the predicted radiofrequency field ("RFF") due to all authorized and operational full-service broadcasters within 500 meters of the KVRR-DT tower site.

#### KVRR-DT DTV Facility (Proposed)

Channel 19	Freq:	500-506 MHz range
	ERP =	1000 kW

Polarization = Horizontal  
 RCAGL -2 meters = 290.6 meters

KVRR-DT proposes to utilize a Dielectric, Type TFU-24DSC-R P290 antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane pattern for this antenna is included as Exhibit E-2. Based on this plot, the field factor will be less than 0.15 at any angle greater than 5 degrees below the horizon. A value of 0.15 will be used in the calculation.

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

Tot ERP = 1000 kW (Horizontal Only)  
 R = 290.6 meters  
 F = 0.15 (field factor)

$$S = 8.9 \mu\text{W}/\text{cm}^2$$

KVRR-DT contributes less than 8.9  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground. The limit for an uncontrolled environment is f/1.5 for a station broadcasting in the 300-1500 MHz range.

(503 MHz)/1.5 = 335.3  $\mu\text{W}/\text{cm}^2$  is the RFF limit for KVRR-DT.

Therefore:

KVRR-DT DTV facility contributes less than 2.7% RFF for an uncontrolled environment two meters above ground in the vicinity of the KVRR-DT tower site.

#### KVRR(TV) NTSC Facility

Channel 15                      Freq:                      476-482 MHz range  
                                          ERP =                      (0.4) [4170 kW (visual)]+[417 kW (aural)]  
                                          Polarization =              Horizontal  
                                          RCAGL -2 meters =        322 meters

KVRR(TV) is using a RCA, Type TFU-25JDA antenna with 0.75° electrical beam tilt. The manufacturer's vertical plane pattern for this antenna indicates that the field factor will be less than 0.1 at any angle greater than 30 degrees below the horizon. A value of 0.1 will be used in the calculation.

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

Tot ERP = 2085 kW (Horizontal Only)  
 R = 322 meters  
 F = 0.1 (field factor)

$$S = 6.7 \mu\text{W}/\text{cm}^2$$

KVRR(TV) contributes less than 6.7  $\mu\text{W}/\text{cm}^2$  at 2 meters above ground. The limit for an uncontrolled environment is f/1.5 for a station broadcasting in the 300-1500 MHz range.

(479 MHz)/1.5 = 319.3  $\mu\text{W}/\text{cm}^2$  is the RFF limit for KVRR(TV).

Therefore:

KVRR(TV) NTSC facility contributes less than 3% RFF for an uncontrolled environment two meters above ground in the vicinity of the KVRR-DT tower site.

Total RFF at Site

The total RFF contribution for all transmitters can now be calculated:

$$\text{Total RFF} = 2.7\% + 3\% = 5.7\%$$

Therefore, the total contribution by the operations within 500 meters of the proposed site at 2 meters above ground level is less than 6% of the current FCC guidelines for general population exposure.

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 RFF guidelines, and thus, complies with the RFF element of Section 1.1307 of the FCC Rules.

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

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 permittee indicates:

- (a)(1) The proposed facilities are not located in an officially designated wilderness area.
- (a)(2) The proposed facilities 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) 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 precludes access to the tower site.

TABLE I  
COVERAGE DATA  
FOR PROPOSED OPERATION OF  
KVRR-DT, FARGO, NORTH DAKOTA  
CHANNEL 19 1000 KW MAX ERP 348 METERS HAAT  
DECEMBER 2006

<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	410.6	325.3	0.500	211.6	75.3	86.4
10	418.4	317.4	0.493	84.1	69.3	78.9
20	429.6	306.2	0.485	44.1	65.2	73.9
30	431.0	304.8	0.484	62.5	66.9	75.8
40	426.2	309.6	0.487	90.0	69.1	78.6
50	427.0	308.8	0.487	108.9	70.1	79.7
60	421.1	314.7	0.491	90.0	69.5	79.1
70	419.8	316.0	0.492	62.5	67.6	76.9
80	418.5	317.3	0.493	44.1	65.8	74.8
90	419.4	316.4	0.493	84.1	69.2	78.8
100	414.5	321.3	0.497	211.6	74.9	86.0
110	417.0	318.8	0.495	435.6	79.3	91.6
120	416.9	318.9	0.495	688.9	82.5	95.6
130	412.5	323.3	0.498	902.5	84.9	98.4
140	413.5	322.3	0.497	1000.0	85.6	99.2
150	403.6	332.2	0.505	902.5	85.9	99.3
160	404.2	331.6	0.504	688.9	83.9	96.9
170	408.3	327.5	0.501	435.6	80.2	92.6
180	402.5	333.3	0.506	211.6	76.0	87.3
190	384.3	351.5	0.519	84.1	71.7	82.4
200	369.7	366.1	0.530	44.1	68.8	79.3
210	360.4	375.4	0.537	62.5	71.6	82.4
220	351.8	384.0	0.543	90.0	74.7	85.5
230	346.3	389.5	0.547	108.9	76.4	87.2
240	344.0	391.8	0.548	90.0	75.2	86.0
250	343.2	392.6	0.549	62.5	72.8	83.6
260	342.0	393.8	0.550	44.1	70.6	81.4
270	348.1	387.7	0.545	84.1	74.5	85.3
280	348.6	387.2	0.545	211.6	80.7	91.8

TABLE I  
COVERAGE DATA  
FOR PROPOSED OPERATION OF  
KVRR-DT, FARGO, NORTH DAKOTA  
CHANNEL 19 1000 KW MAX ERP 348 METERS HAAT  
DECEMBER 2006  
(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	352.7	383.1	0.542	435.6	85.2	97.2
300	354.5	381.3	0.541	688.9	88.3	101.1
310	353.9	381.9	0.541	902.5	90.3	103.6
320	358.5	377.3	0.538	1000.0	90.7	104.2
330	364.7	371.1	0.534	902.5	89.5	102.7
340	370.3	365.5	0.530	688.9	87.1	99.9
350	396.8	339.0	0.510	435.6	81.4	93.7

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

DTV Channel 19 (500-506 MHz)  
Center of Radiation 735.8 meters AMSL  
Antenna Height Above Average Terrain 348 meters  
Effective Radiated Power 1000 kW (30 dBk) Max

North Latitude: 46° 40' 29"

West Longitude: 96° 13' 40"

(NAD-27)

ABOVE GROUND

ABOVE MEAN SEA LEVEL

335.5 m. (1100.8')

778.7 m. (2555.2')

C/R 323.8 m. (1062')

767.0 m. (2516.7') C/R

C/R 292.6 m. (960')

735.8 m. (2414') C/R

**PROPOSED KVRR-DT ANTENNA**  
**CHANNEL 19**

C/R 240.8 m. (790')

684.0 m. (2244') C/R

**FORMER**  
**KFGX(FM) FM ANTENNA**  
**CHANNEL 236C1**

**TOWER No. 1049364**

GUYED TOWER

0 m. (0')

443.2 m. (1454.4')

(NOT TO SCALE)

EXHIBIT E - 1  
VERTICAL SKETCH  
FOR THE PROPOSED OPERATION OF  
**KVRR-DT, FARGO, NORTH DAKOTA**  
DECEMBER 2006

COHEN, DIPPELL and EVERIST, P.C. CONSULTING ENGINEERS

EXHIBIT E-2

ANTENNA MANUFACTURER DATA

KVRR-DT, FARGO, NORTH DAKOTA

# Dielectric

Proposal #: **DCA-10783**    Antenna Type: **TFU-24DSC-R P290**    Channel: **19 DTV**  
 Call Letters: **KVRR-DT**    Location: **Fargo, ND**

Electrical Specifications		Value		Remarks
		Ratio	dB	
RMS Gain at Main Lobe over Halfwave Dipole	Hpol	19.0	12.79	
	Vpol			
RMS Gain at Horizontal over Halfwave Dipole	Hpol	14.9	11.73	
	Vpol			
Peak Directional Gain over Halfwave Dipole	Hpol	55.1	17.41	
	Vpol			
Peak Directional Gain at Horizontal over Halfwave Dipole	Hpol	43.2	16.35	
	Vpol			
Circularity		dB		
Axial Ratio		dB		
Beam Tilt		0.75 deg		
Average Power	DTV	60 kW	17.78 dBk	
Antenna Input:	T/L	6 1/8 in	75.0 ohm	Type: EIA/DCA
Maximum Antenna Input VSWR		Channel 1.08 : 1		
Patterns	Azimuth	TFU-P290-5030		
	Elevation	24Q190075	24Q190075-90	
Mechanical Specifications		Metric	English	Preliminary
Height with Lightning Protector	H4	m	ft	<b>Side mounted</b>
Height Less Lightning Protector	H2	16.1 m	52.8 ft	
Height of Center of Radiation	H3	8.0 m	26.4 ft	
Basic Wind Speed	V	136.8 km/h	85 mi/h	TIA/EIA-222-F.
Force Coeff. x Projected Area	CaAc	9.03 m <sup>2</sup>	97.2 ft <sup>2</sup>	Excludes Mounts
Moment Arm	D1	m	ft	
Force Coeff. x Projected Area	CaAc	m <sup>2</sup>	ft <sup>2</sup>	
Moment Arm	D3	m	ft	
Pole Bury Length	D2	m	ft	
Weight	W	0.8 t	1,670 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 :  
 Original Date : 15-Dec-04

SWB  
*SWB*

Approved By :

*M.A.*

AJS



**SIDE MOUNTED ANTENNA**  
**TFU-24DSC-R P290**  
**KVRR-DT: Fargo, ND**

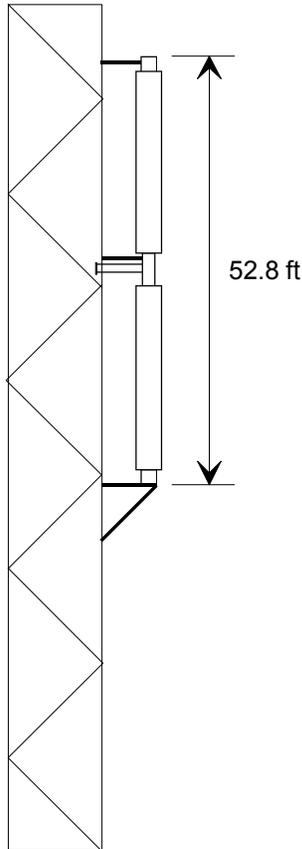
**Preliminary**  
**MECHANICAL DATA**

CaAc = 97.2 ft<sup>2</sup> Excludes Mounts

Center of Radiation = 26.4 ft

Weight = 1670 lbs Excludes Mounts

EIA-222-F Specification  
(85 mph basic wind speed)



CH d19  
TFU-24DSC-R P290



Proposal Number **DCA-10783**  
Date **15-Dec-04**  
Call Letters **KVRR-DT** Channel **19**  
Location **Fargo, ND**  
Customer  
Antenna Type **TFU-24DSC-R P290**

## SYSTEM SUMMARY

### Antenna:

Type:	<b>TFU-24DSC-R P290</b>	ERP:	<b>1000 kW</b>	H Pol	<b>( 30.00 dBk )</b>
Channel:	<b>19</b>	Peak Gain*:	<b>55.1</b>		<b>( 17.41 dB )</b>
Location:	<b>Fargo, ND</b>	Input Power:	<b>18.1 kW</b>		<b>( 12.59 dBk )</b>

### Transmission Line:

Type:	<b>EIA/DCA</b>	Attenuation:		<b>1.26 dB</b>
Size:	<b>6-1/8 in</b>	Efficiency:	<b>74.8%</b>	
Impedance:	<b>75 ohm</b>			
Length:	<b>1,160 ft</b>		<b>353.6 m</b>	

Shared line tee:	<b>DCA</b>	Attenuation:		<b>0.20 dB</b>
		Efficiency:	<b>95.5%</b>	

### Transmitter :

Power Required: **25.4 kW ( 14.05 dBk )**

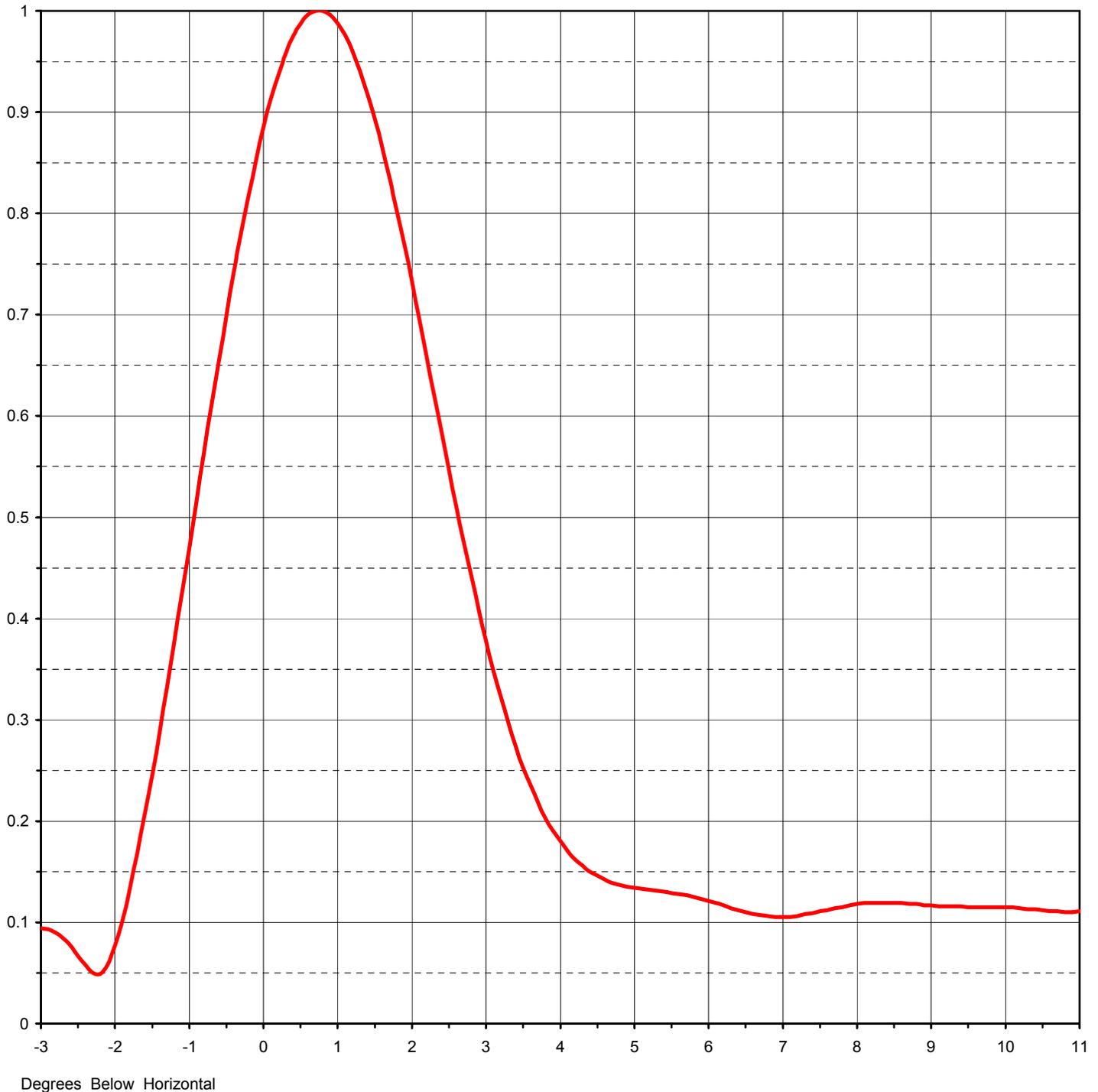
\* Gain is with respect to half wave dipole.



Proposal Number **DCA-10783**  
Date **15-Dec-04**  
Call Letters **KVRR-DT** Channel **19**  
Location **Fargo, ND**  
Customer  
Antenna Type **TFU-24DSC-R P290**

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>19.00 ( 12.79 dB )</b>	Beam Tilt	<b>0.75 deg</b>
RMS Gain at Horizontal	<b>14.90 ( 11.73 dB )</b>	Frequency	<b>503.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>24Q190075</b>

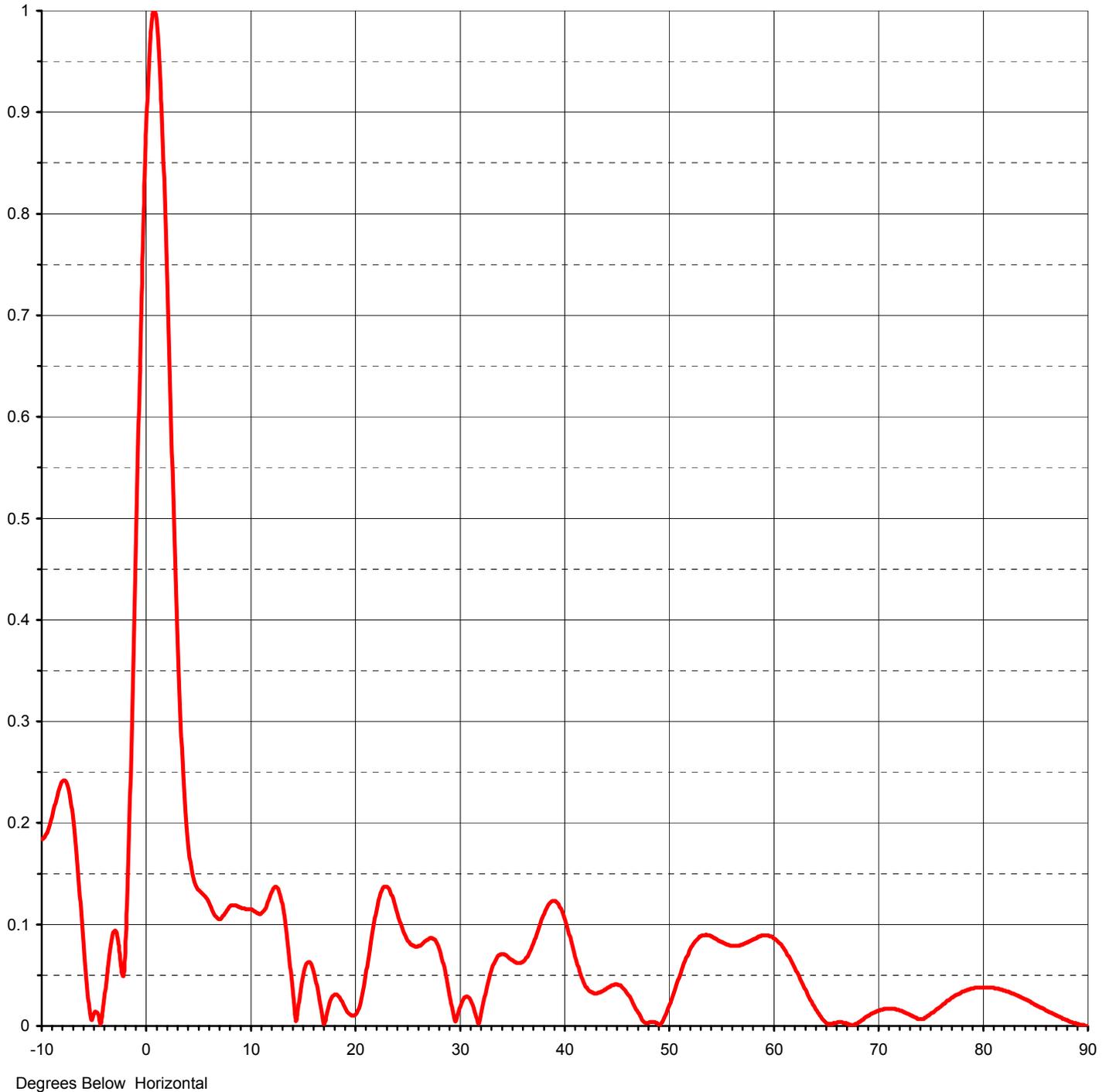




Proposal Number **DCA-10783**  
Date **15-Dec-04**  
Call Letters **KVRR-DT** Channel **19**  
Location **Fargo, ND**  
Customer  
Antenna Type **TFU-24DSC-R P290**

### ELEVATION PATTERN

RMS Gain at Main Lobe	<b>19.00 ( 12.79 dB )</b>	Beam Tilt	<b>0.75 deg</b>
RMS Gain at Horizontal	<b>14.90 ( 11.73 dB )</b>	Frequency	<b>503.00 MHz</b>
Calculated / Measured	<b>Calculated</b>	Drawing #	<b>24Q190075-90</b>





Proposal Number **DCA-10783**  
 Date **15-Dec-04**  
 Call Letters **KVRR-DT** Channel **19**  
 Location **Fargo, ND**  
 Customer  
 Antenna Type **TFU-24DSC-R P290**

### TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **24Q190075-90**

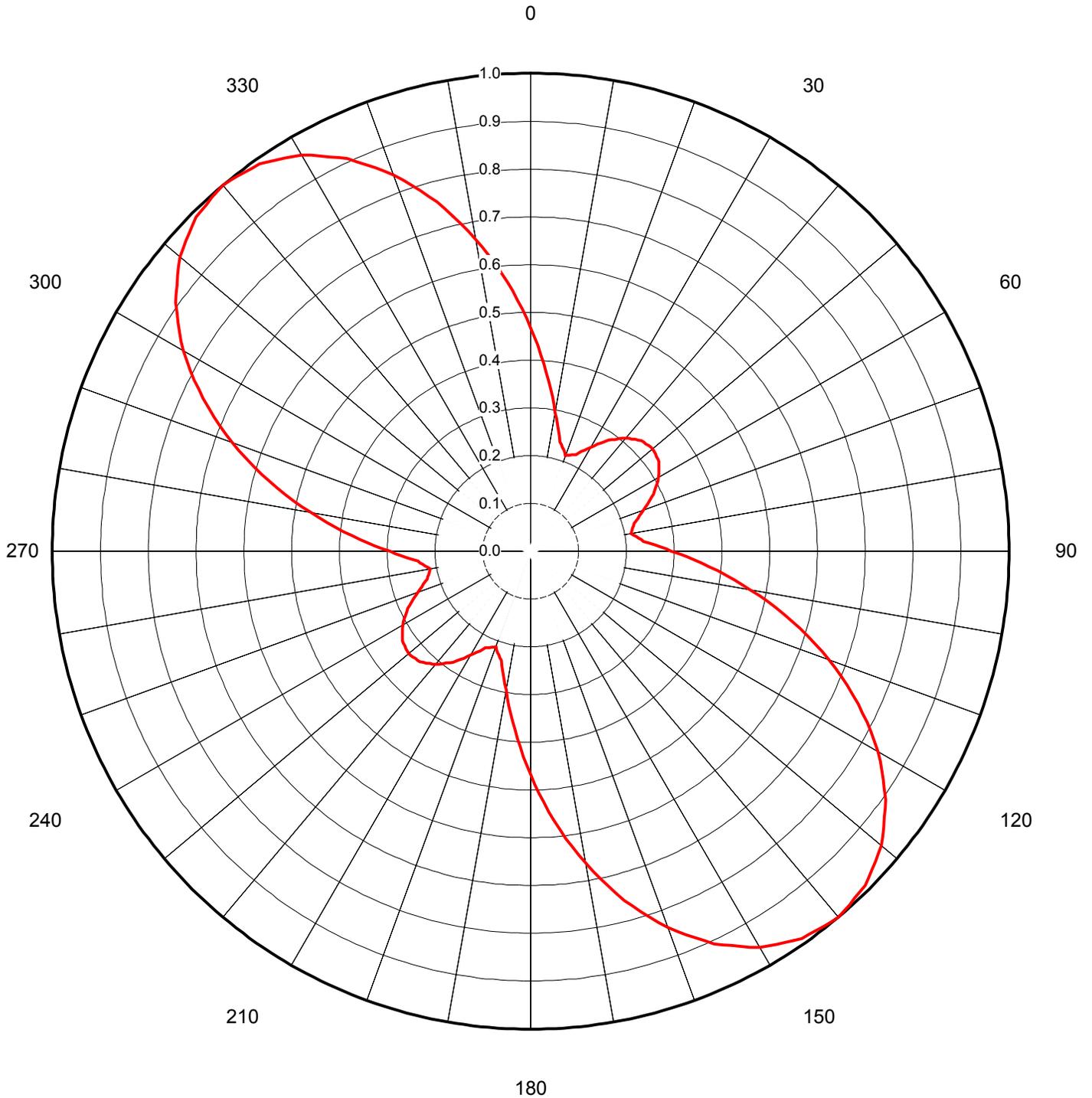
Angle	Field										
-10.0	0.184	2.4	0.584	10.6	0.112	30.5	0.028	51.0	0.047	71.5	0.017
-9.5	0.190	2.6	0.511	10.8	0.111	31.0	0.027	51.5	0.062	72.0	0.015
-9.0	0.206	2.8	0.442	11.0	0.110	31.5	0.014	52.0	0.074	72.5	0.013
-8.5	0.227	3.0	0.378	11.5	0.116	32.0	0.007	52.5	0.082	73.0	0.011
-8.0	0.241	3.2	0.322	12.0	0.130	32.5	0.031	53.0	0.088	73.5	0.008
-7.5	0.236	3.4	0.274	12.5	0.137	33.0	0.052	53.5	0.089	74.0	0.007
-7.0	0.204	3.6	0.235	13.0	0.125	33.5	0.065	54.0	0.089	74.5	0.008
-6.5	0.148	3.8	0.203	13.5	0.092	34.0	0.071	54.5	0.086	75.0	0.012
-6.0	0.081	4.0	0.180	14.0	0.044	34.5	0.070	55.0	0.083	75.5	0.016
-5.5	0.022	4.2	0.162	14.5	0.007	35.0	0.065	55.5	0.081	76.0	0.020
-5.0	0.012	4.4	0.150	15.0	0.045	35.5	0.062	56.0	0.079	76.5	0.024
-4.5	0.007	4.6	0.142	15.5	0.062	36.0	0.063	56.5	0.079	77.0	0.028
-4.0	0.028	4.8	0.137	16.0	0.057	36.5	0.068	57.0	0.080	77.5	0.031
-3.5	0.072	5.0	0.134	16.5	0.035	37.0	0.079	57.5	0.082	78.0	0.034
-3.0	0.094	5.2	0.132	17.0	0.006	37.5	0.093	58.0	0.085	78.5	0.036
-2.8	0.090	5.4	0.130	17.5	0.018	38.0	0.107	58.5	0.087	79.0	0.037
-2.6	0.077	5.6	0.128	18.0	0.030	38.5	0.119	59.0	0.089	79.5	0.038
-2.4	0.058	5.8	0.125	18.5	0.029	39.0	0.123	59.5	0.089	80.0	0.038
-2.2	0.049	6.0	0.121	19.0	0.020	39.5	0.120	60.0	0.087	80.5	0.038
-2.0	0.077	6.2	0.117	19.5	0.012	40.0	0.108	60.5	0.083	81.0	0.038
-1.8	0.134	6.4	0.112	20.0	0.010	40.5	0.091	61.0	0.077	81.5	0.037
-1.6	0.206	6.6	0.108	20.5	0.020	41.0	0.072	61.5	0.069	82.0	0.035
-1.4	0.288	6.8	0.106	21.0	0.045	41.5	0.054	62.0	0.059	82.5	0.033
-1.2	0.377	7.0	0.105	21.5	0.078	42.0	0.041	62.5	0.049	83.0	0.031
-1.0	0.470	7.2	0.106	22.0	0.109	42.5	0.034	63.0	0.038	83.5	0.029
-0.8	0.564	7.4	0.109	22.5	0.131	43.0	0.032	63.5	0.027	84.0	0.026
-0.6	0.656	7.6	0.112	23.0	0.137	43.5	0.033	64.0	0.018	84.5	0.024
-0.4	0.742	7.8	0.115	23.5	0.130	44.0	0.036	64.5	0.009	85.0	0.021
-0.2	0.819	8.0	0.118	24.0	0.114	44.5	0.039	65.0	0.003	85.5	0.018
0.0	0.885	8.2	0.119	24.5	0.098	45.0	0.041	65.5	0.002	86.0	0.015
0.2	0.937	8.4	0.119	25.0	0.086	45.5	0.039	66.0	0.003	86.5	0.013
0.4	0.975	8.6	0.119	25.5	0.080	46.0	0.033	66.5	0.004	87.0	0.010
0.6	0.996	8.8	0.118	26.0	0.078	46.5	0.025	67.0	0.002	87.5	0.008
0.8	1.000	9.0	0.117	26.5	0.081	47.0	0.015	67.5	0.000	88.0	0.006
1.0	0.988	9.2	0.116	27.0	0.085	47.5	0.006	68.0	0.003	88.5	0.004
1.2	0.960	9.4	0.116	27.5	0.086	48.0	0.003	68.5	0.006	89.0	0.002
1.4	0.919	9.6	0.115	28.0	0.079	48.5	0.004	69.0	0.010	89.5	0.001
1.6	0.865	9.8	0.115	28.5	0.061	49.0	0.002	69.5	0.013	90.0	0.000
1.8	0.802	10.0	0.115	29.0	0.036	49.5	0.006	70.0	0.015		
2.0	0.733	10.2	0.115	29.5	0.009	50.0	0.018	70.5	0.017		
2.2	0.659	10.4	0.113	30.0	0.015	50.5	0.032	71.0	0.017		



Proposal Number **DCA-10783**  
Date **15-Dec-04**  
Call Letters **KVRR-DT** Channel **19**  
Location **Fargo, ND**  
Customer  
Antenna Type **TFU-24DSC-R P290**

### AZIMUTH PATTERN

Gain **2.90** (4.62 dB)  
Calculated / Measured **Calculated**  
Frequency **503.00 MHz**  
Drawing # **TFU-P290-5030**



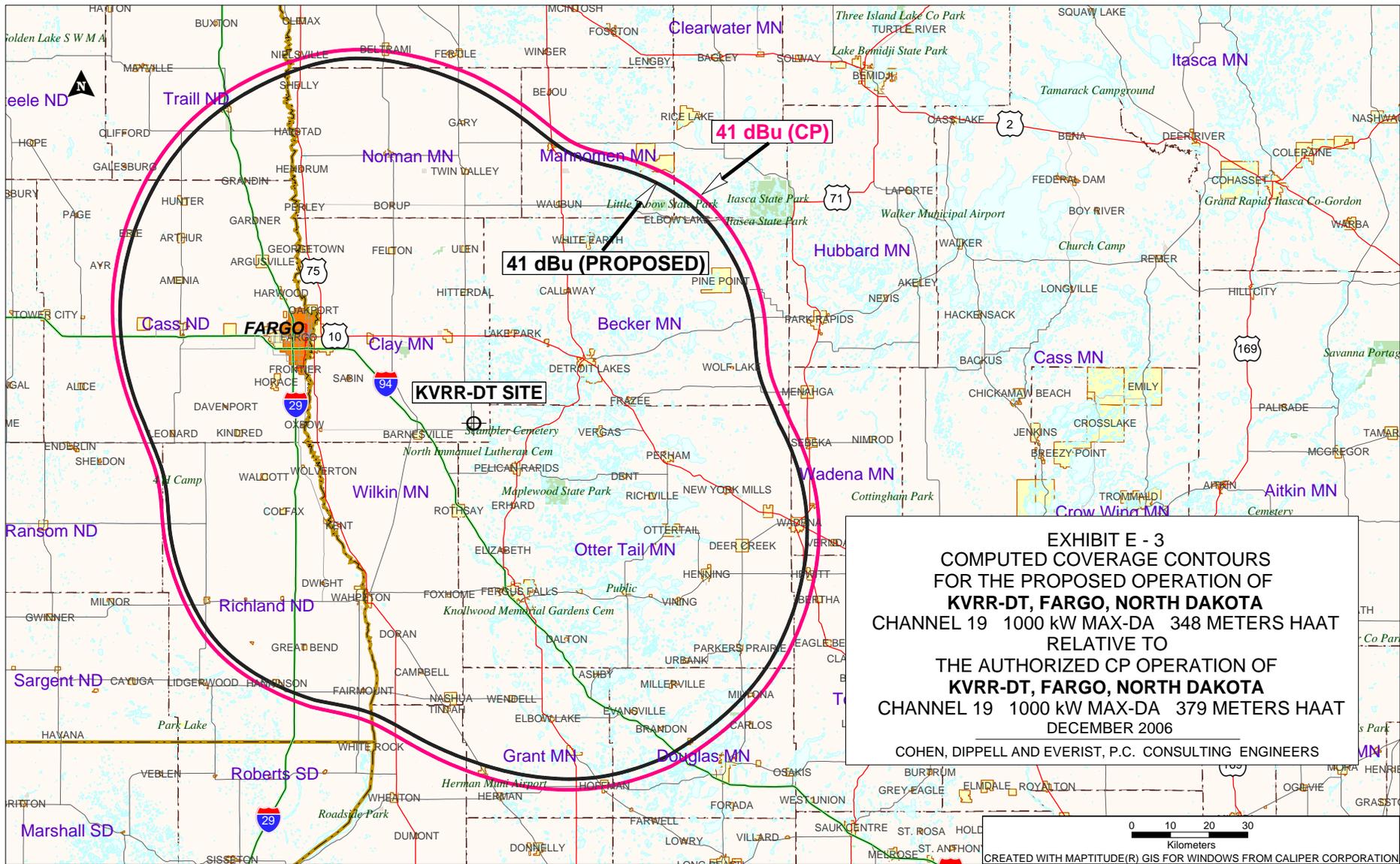


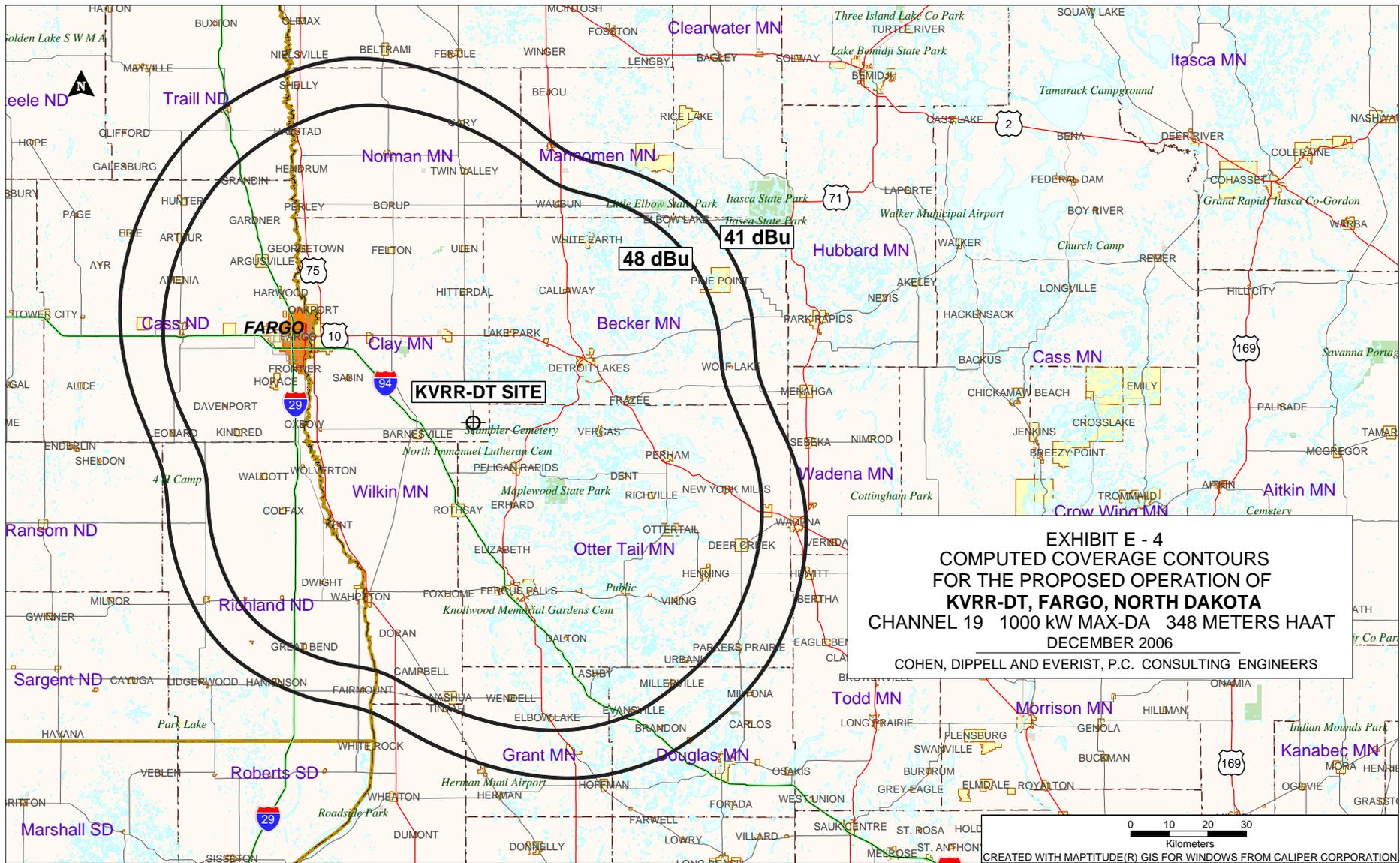
Proposal Number **DCA-10783**  
 Date **15-Dec-04**  
 Call Letters **KVRR-DT** Channel **19**  
 Location **Fargo, ND**  
 Customer  
 Antenna Type **TFU-24DSC-R P290**

### TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TFU-P290-5030**

Angle	Field														
0	0.460	45	0.327	90	0.290	135	0.989	180	0.460	225	0.327	270	0.290	315	0.989
1	0.448	46	0.328	91	0.310	136	0.991	181	0.448	226	0.328	271	0.310	316	0.991
2	0.430	47	0.329	92	0.326	137	0.993	182	0.430	227	0.329	272	0.326	317	0.993
3	0.411	48	0.331	93	0.342	138	0.996	183	0.411	228	0.331	273	0.342	318	0.996
4	0.393	49	0.332	94	0.358	139	0.998	184	0.393	229	0.332	274	0.358	319	0.998
5	0.374	50	0.330	95	0.374	140	1.000	185	0.374	230	0.330	275	0.374	320	1.000
6	0.358	51	0.332	96	0.393	141	0.998	186	0.358	231	0.332	276	0.393	321	0.998
7	0.342	52	0.331	97	0.411	142	0.996	187	0.342	232	0.331	277	0.411	322	0.996
8	0.326	53	0.329	98	0.430	143	0.993	188	0.326	233	0.329	278	0.430	323	0.993
9	0.310	54	0.328	99	0.448	144	0.991	189	0.310	234	0.328	279	0.448	324	0.991
10	0.290	55	0.327	100	0.460	145	0.989	190	0.290	235	0.327	280	0.460	325	0.989
11	0.283	56	0.323	101	0.487	146	0.983	191	0.283	236	0.323	281	0.487	326	0.983
12	0.271	57	0.320	102	0.507	147	0.976	192	0.271	237	0.320	282	0.507	327	0.976
13	0.260	58	0.316	103	0.526	148	0.970	193	0.260	238	0.316	283	0.526	328	0.970
14	0.248	59	0.313	104	0.546	149	0.963	194	0.248	239	0.313	284	0.546	329	0.963
15	0.237	60	0.300	105	0.566	150	0.950	195	0.237	240	0.300	285	0.566	330	0.950
16	0.232	61	0.304	106	0.585	151	0.947	196	0.232	241	0.304	286	0.585	331	0.947
17	0.227	62	0.299	107	0.605	152	0.937	197	0.227	242	0.299	287	0.605	332	0.937
18	0.223	63	0.293	108	0.624	153	0.926	198	0.223	243	0.293	288	0.624	333	0.926
19	0.218	64	0.288	109	0.644	154	0.916	199	0.218	244	0.288	289	0.644	334	0.916
20	0.210	65	0.283	110	0.660	155	0.906	200	0.210	245	0.283	290	0.660	335	0.906
21	0.215	66	0.277	111	0.682	156	0.892	201	0.215	246	0.277	291	0.682	336	0.892
22	0.217	67	0.270	112	0.700	157	0.879	202	0.217	247	0.270	292	0.700	337	0.879
23	0.219	68	0.264	113	0.719	158	0.865	203	0.219	248	0.264	293	0.719	338	0.865
24	0.221	69	0.257	114	0.737	159	0.852	204	0.221	249	0.257	294	0.737	339	0.852
25	0.223	70	0.250	115	0.756	160	0.830	205	0.223	250	0.250	295	0.756	340	0.830
26	0.229	71	0.245	116	0.772	161	0.822	206	0.229	251	0.245	296	0.772	341	0.822
27	0.234	72	0.240	117	0.789	162	0.805	207	0.234	252	0.240	297	0.789	342	0.805
28	0.240	73	0.234	118	0.805	163	0.789	208	0.240	253	0.234	298	0.805	343	0.789
29	0.245	74	0.229	119	0.822	164	0.772	209	0.245	254	0.229	299	0.822	344	0.772
30	0.250	75	0.223	120	0.830	165	0.756	210	0.250	255	0.223	300	0.830	345	0.756
31	0.257	76	0.221	121	0.852	166	0.737	211	0.257	256	0.221	301	0.852	346	0.737
32	0.264	77	0.219	122	0.865	167	0.719	212	0.264	257	0.219	302	0.865	347	0.719
33	0.270	78	0.217	123	0.879	168	0.700	213	0.270	258	0.217	303	0.879	348	0.700
34	0.277	79	0.215	124	0.892	169	0.682	214	0.277	259	0.215	304	0.892	349	0.682
35	0.283	80	0.210	125	0.906	170	0.660	215	0.283	260	0.210	305	0.906	350	0.660
36	0.288	81	0.218	126	0.916	171	0.644	216	0.288	261	0.218	306	0.916	351	0.644
37	0.293	82	0.223	127	0.926	172	0.624	217	0.293	262	0.223	307	0.926	352	0.624
38	0.299	83	0.227	128	0.937	173	0.605	218	0.299	263	0.227	308	0.937	353	0.605
39	0.304	84	0.232	129	0.947	174	0.585	219	0.304	264	0.232	309	0.947	354	0.585
40	0.300	85	0.237	130	0.950	175	0.566	220	0.300	265	0.237	310	0.950	355	0.566
41	0.313	86	0.248	131	0.963	176	0.546	221	0.313	266	0.248	311	0.963	356	0.546
42	0.316	87	0.260	132	0.970	177	0.526	222	0.316	267	0.260	312	0.970	357	0.526
43	0.320	88	0.271	133	0.976	178	0.507	223	0.320	268	0.271	313	0.976	358	0.507
44	0.323	89	0.283	134	0.983	179	0.487	224	0.323	269	0.283	314	0.983	359	0.487





**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.**

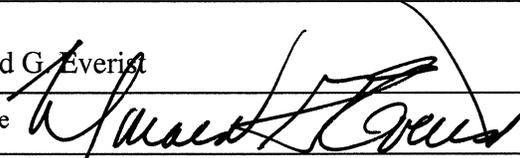
I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith. I acknowledge that all certifications and attached Exhibits are considered material representations. I hereby waive any claim to the use of any particular 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 <i>December 27, 2006</i>	
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).