

ENGINEERING REPORT  
MODIFICATION OF CONSTRUCTION PERMIT  
FCC FILE NO. BPCDT-19991021AAT  
RE REQUEST TO OPERATE DTV STATION  
**KCLO-DT, RAPID CITY, SOUTH DAKOTA**  
CHANNEL 16 150 KW MAX. ERP 154 METERS HAAT

OCTOBER 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         )

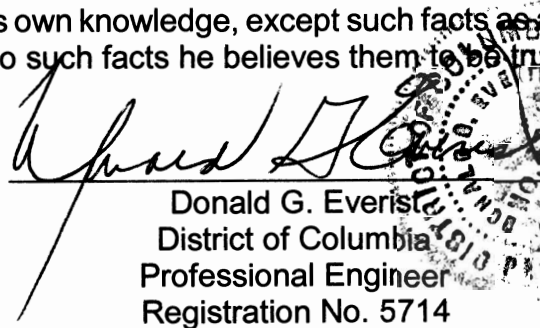
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

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;

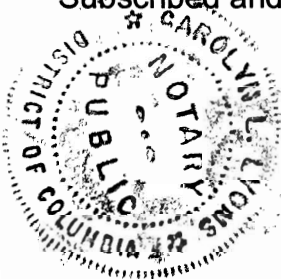
That his qualifications are a matter of record in the Federal Communications Commission;

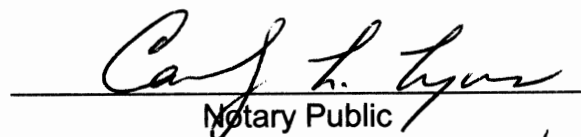
That the attached engineering report was prepared by him or under his supervision and direction and

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 29<sup>th</sup> day of October, 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:

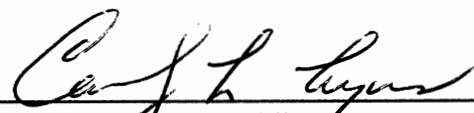
He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

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

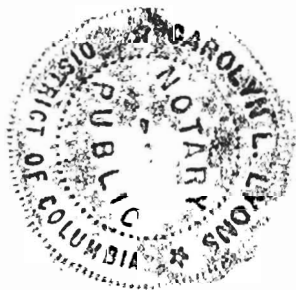
That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

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

Subscribed and sworn to before me this 29<sup>th</sup> day of October, 2004.

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

My Commission Expires: 2/28/2008



### Introduction

This engineering report has been prepared on behalf of Young Broadcasting of Rapid City, Inc. (“Young”), licensee of TV station KCLO-TV, Rapid City, South Dakota in support of its request for modification of construction permit (FCC File No. BPCDT-19991021AAT) for its digital television (“DTV”) operation. At present, KCLO-TV operates on analog TV Channel 15 (476-482 MHz) with 692 kW effective radiated power (ERP) and 155 meters antenna height above average terrain (“HAAT”) with a directional TV antenna. Station KCLO-TV has been allotted Channel 16 (482-488 MHz) for its digital TV operation and has been authorized to construct a facility (BPCDT-19991021AAT) with 200 kW ERP and 154 meters HAAT using a directional TV antenna. It is proposed to operate KCLO-DT from the existing tower (no change in overall height) with 150 kW maximum ERP and 154 meters HAAT using a directional TV antenna from the station’s licensed transmitter site. This power and height will ensure that it does not extend the predicted 41 dBu contour in any direction beyond that authorized by the construction permit.

### Antenna Site

The combined Channel 15 analog and Channel 16 DTV antenna is top-mounted on the existing self-supported tower. There will be no change in the overall height of the structure. The tower also supports antennas for FM stations KOUT(FM) and KFXS(FM).

The KCLO-TV antenna site is located on Skyline Drive, Rapid City, Pennington County, South Dakota. The KCLO-TV Antenna Structure Registration (1035414) accurately reflects the antenna site.

The geographic coordinates (NAD-27) of the existing tower based on the Antenna Structure Registration No. 1035414 are as follows.

North Latitude: 44° 04' 13"

West Longitude: 103° 15' 01"

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

#### Equipment Data

Antenna: Dielectric, Model No. TFU-20GTH-R CT160 DC. The azimuth and vertical radiation patterns and tabulations required by Section 73.625 are herein included (Exhibits E-2A through E-2E with electrical beam tilt of 0.75 degrees and directional

Transmission Line: Dielectric, EIA/DCA, 6-1/8", 75 ohm, 131.1 meters (430') in length

#### Power Data

Transmitter output	7.1 kW	8.51 dBk
Combiner loss	89.1%	-0.5 dB
Transmission line loss	90.0%	-0.46 dB
Input power to antenna	5.68 kW	7.54 dBk
Antenna power gain, main lobe	26.4	14.22 dB
Effective Radiated Power, maximum	150 kW	21.76 dBk

#### Elevation Data\*

Elevation of the site above mean sea level:	1152 meters
Elevation of the top of supporting structure: above grounding including DTV antenna	121.6 meters

Elevation of the top of supporting structure: above mean sea level including DTV antenna	1273.6 meters
Height of DTV antenna radiation center: meters above ground	114 meters
Height of DTV antenna radiation center: above mean sea level	1266 meters
Height of DTV antenna radiation center: above average terrain	154 meters

\* to the nearest meter.

#### Authorized Effective Radiated Power

The maximum ERP authorized by the outstanding construction permit for the DTV operation is 200 kW at 154 meters HAAT. Station KCLO-DT is proposing to operate with a maximum ERP of 150 kW and 154 meters HAAT using a directional TV antenna. This power and height will ensure that it does not extend the predicted 41 dBu contour in any direction beyond that authorized by the construction permit.

The attached map (Exhibit E-3) shows the computed F(50,90) 48 dBu and 41 dBu predicted contours according to Section 73.625(b) of the Commission's Rules.

#### 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 KCLO-DT places a predicted 48 dBu contour over the community of Rapid City, South Dakota (see Exhibit E-3).

#### Topographic Data

The average elevation data of the eight cardinal radials from 3.2 to 16.1 kilometers, has been obtained from the KCLO-TV license file at the Commission and determines the height above average terrain.

#### 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 dBu and 41 dBu contours were determined from reference to the propagation data for Channels 14-69, as published by the Commission in Figure 10b and 10c, Section 73.699 of its rules.

The distances spaced every 10 degrees beginning with true north 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 I). As indicated above the data for average elevation was obtained from the KCLO-TV license file and has been used to determine that HAAT. The attached map (Exhibit E-3) indicates the proposed KCLO-DT operation will provide 41 dBu and 48 dBu signal level over all of Rapid City, South Dakota, the principal community of the TV station.

The following broadcast stations are operating, or are proposed to operate, from the tower:

KCLO-TV

KCLO-DT

KOUT(FM)

KFXS(FM)

A neighboring tower 200 meters away has two TV broadcast stations (KOTA-DT and KOTA-TV) and two FM broadcast stations (KZLK(FM) and KQRQ(FM)).

The radio frequency field ("RFF") on the KCLO tower as well as the neighboring tower will be calculated and summed to give a total value two meters above ground at the base of the tower.

**Station KCLO-TV**

Channel 15      Freq: 476-482 MHz Range

$$S = \frac{33.4 (F^2) [0.4 * ERP_{\text{visual}} + ERP_{\text{aural}}]}{R^2}$$

ERP visual = 69.2 kW (Horizontal only)  
 ERP aural = 692 kW (Horizontal only)  
 R = 112 meters (antenna height above ground -2 meters)  
 F = 0.2 (assumed)

$$S = < 36.9 \mu\text{W}/\text{cm}^2$$

The limit for an uncontrolled environment (general population) for this frequency range is 319.33  $\mu\text{W}/\text{cm}^2$ .

**KCLO-TV contributes less than 11.5% RFF level for an uncontrolled environment (general population) two meters above ground.**



**Station KCLO-DT** (modification of construction permit)

Channel 16      Freq: 482-488 MHz Range

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

ERP =	150 kW (Horizontal only)
R =	112 meters (antenna height above ground -2 meters)
F =	0.2 (assumed)

$$S = <16.1 \mu\text{W}/\text{cm}^2$$

The limit for an uncontrolled environment (general population) for this frequency range is 323.33  $\mu\text{W}/\text{cm}^2$ .

Therefore under this proposed scenario:

**KCLO-DT contributes less than 4% RFF level for an uncontrolled environment (general population) two meters above ground.**

**Station KOUT(FM)**

Channel 254C1      Freq: 98.7 MHz

$$S = \frac{33.4 (F^2) ERP_{H+V}}{R^2}$$

ERP =	100 kW (Horizontal and Vertical)
R =	94 meters (antenna height above ground -2 meters)
F =	0.25 (assumed)

$$S = <47.2 \mu\text{W}/\text{cm}^2$$

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

**KOUT(FM) contributes less than 24% RFF level for an uncontrolled environment (general population) two meters above ground.**

**Station KFXS(FM)**

Channel 262C1      Freq: 100.3 MHz Range

$$S = \frac{33.4 (F^2) ERP_{H+V}}{R^2}$$

ERP = 100 kW (Horizontal and Vertical)  
R = 94 meters (antenna height above ground -2 meters)  
F = 0.25 (assumed)

$$S = < 47.2 \mu W/cm^2$$

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

Therefore under this proposed scenario:

**KFXS(FM) contributes less than 24% RFF level for an uncontrolled environment (general population) two meters above ground.**

The following broadcast stations are operating from a tower 200 meters away from the proposed KCLO-DT operation.

KOTA-TV

KOTA-DT

KQRQ(FM)

KZLK(FM)

**Station KOTA-TV**

Channel 3      Freq: 60-66 MHz Range

$$S = \frac{33.4 (F^2) [0.4 * ERP_{visual} + ERP_{aural}]}{R^2}$$

ERP visual = 100 kW (Horizontal only)  
ERP aural = 10 kW (Horizontal only)  
R = 256.9 meters (distance from radiation center to base of KCLO-DT proposed site)  
F = 0.21 (assumed)

$$S = < 1.1 \mu W/cm^2$$

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

**KOTA-TV contributes less than 0.6% RFF level for an uncontrolled environment (general population) two meters above ground.**

### **Station KOTA-DT**

Channel 2      Freq: 54-60 MHz Range

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

ERP = 7.1 kW (Horizontal only)  
 R = 245.5 meters (distance from radiation center to base of KCLO-DT proposed site)  
 F = 0.8 (assumed)

$$S = <2.5 \mu\text{W}/\text{cm}^2$$

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

Therefore under this proposed scenario:

**KOTA-DT contributes less than 1.3% RFF level for an uncontrolled environment (general population) two meters above ground.**

### **Station KORQ(FM)**

Channel 222C1      Freq: 92.3 MHz

$$S = \frac{33.4 (F^2) \text{ERP}_{\text{H+V}}}{R^2}$$

ERP = 86 kW (Horizontal and Vertical)  
 R = 240.4 meters (distance from radiation center to base of KCLO-DT proposed site)  
 F = 0.3 (assumed)

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

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

**KQRQ(FM) contributes less than 4.5% RFF level for an uncontrolled environment (general population) two meters above ground.**

**Station KZLK(FM)**

Channel 292C1      Freq: 106.3 MHz Range

$$S = \frac{33.4 (F^2) ERP_{H+V}}{R^2}$$

ERP = 92 kW (Horizontal and Vertical)  
R = 261.2 meters (distance from radiation center to base of KCLO-DT proposed site)  
F = 0.3 (assumed)

$$S = < 8.1 \mu\text{W}/\text{cm}^2$$

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

**KZLK(FM) contributes less than 4.1% RFF level for an uncontrolled environment (general population) two meters above ground.**

Therefore the total RFF percentage two meters above ground at the highest RFF point will still be less than 75% of the limit, when all transmitters on the tower are operational.

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

For the reasons stated above, it is believed this proposal complies with Section 1.1307(a) and (b) of the Commission's Rules; therefore, under Section 1.1306, it is categorically excluded from the environmental processing.

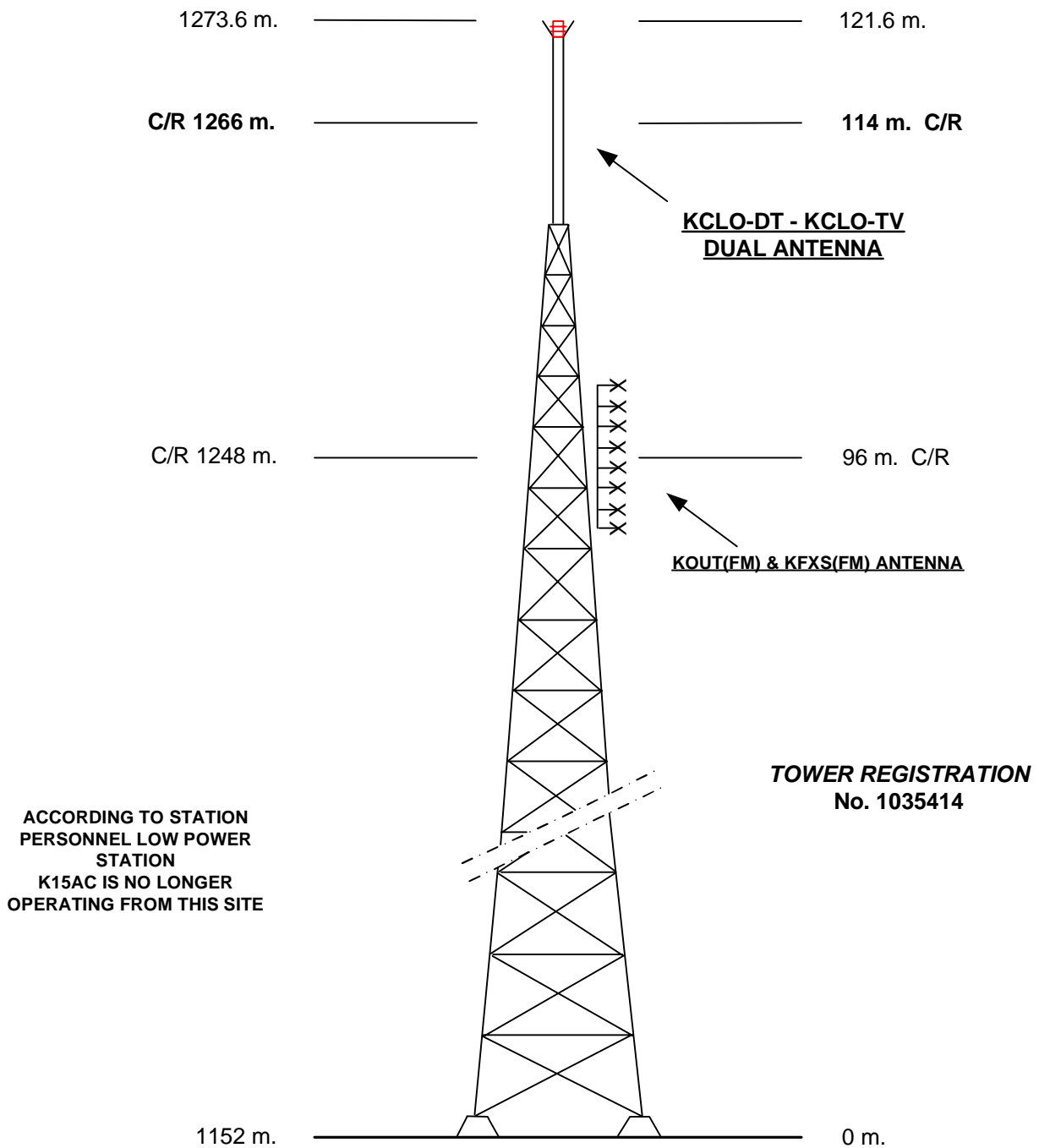
Summary of Environmental Assessment

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

- (a)(1) The proposed facilities on the existing tower will not be located in an officially designated wilderness area.
- (a)(2) The proposed facilities on the existing tower will not be located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities on the existing tower will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities on the 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 on the 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 on the existing tower will not be located near any known Indian religious sites.
- (a)(6) The proposed facilities on the existing tower will not be located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing guyed tower 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 of the antennas where potential radiation levels are in excess of the FCC guidelines.

ABOVE MEAN SEA LEVEL

ABOVE GROUND



NOT TO SCALE

EXHIBIT E-1  
VERTICAL SKETCH  
FOR THE PROPOSED MODIFICATION OF CONSTRUCTION PERMIT  
**KCLO-DT, RAPID CITY, SOUTH DAKOTA**  
OCTOBER 2004

COHEN, DIPPELL and EVERIST, P.C. Consulting Engineers

TABLE I  
DTV COVERAGE DATA  
FOR PROPOSED OPERATION OF  
KCLO-DT RAPID CITY SOUTH DAKOTA  
CHANNEL 16 150 KW ERP 154 METERS HAAT  
OCTOBER 2004

<u>Radial</u> N ° E, T	<u>Effective</u> <u>Height</u> meters	<u>Average</u> <u>Elevation</u> meters	<u>ERP</u> kW	<u>Distance to Contour</u>	
				<u>48 dBu</u> km	<u>41 dBu</u> km
0	215.5	1050.5	147.0	65.4	73.1
10	238.0	1028.0	147.0	66.9	74.7
20	263.0	1003.0	139.0	68.2	76.5
30	280.5	985.5	132.0	68.8	77.6
40	280.7	985.3	110.0	68.2	76.8
50	286.2	979.8	103.0	68.3	77.0
60	294.2	971.8	110.0	69.1	78.3
70	299.2	966.8	126.0	70.2	79.7
80	276.0	990.0	143.0	69.2	77.9
90	290.2	975.8	150.0	70.5	79.8
100	306.3	959.7	143.0	71.4	81.3
110	322.9	943.1	126.0	71.9	82.3
120	309.4	956.6	110.0	70.2	79.9
130	286.5	979.5	103.0	68.3	77.1
140	265.9	1000.1	110.0	67.3	75.4
150	231.8	1034.2	132.0	65.7	73.4
160	201.5	1064.5	139.0	64.3	71.9
170	164.9	1101.1	147.0	62.2	69.5
180	114.1	1151.9	147.0	58.4	65.5
190	106.3	1159.7	139.0	57.4	64.5
200	88.3	1177.7	122.0	54.5	61.7
210	50.8	1215.2	96.9	46.9	53.8
220	36.7	1229.3	61.8	40.6	47.4
230	17.8	1248.2	26.8	30.8	37.7
240	22.8	1243.2	6.7	26.1	33.2
250	44.7	1221.3	9.4	34.4	41.8
260	13.3	1252.7	25.2	29.2	36.0
270	-5.6	1271.6	34.3	24.3	30.6
280	-6.3	1272.3	25.2	22.9	29.0

TABLE I  
DTV COVERAGE DATA  
FOR PROPOSED OPERATION OF  
KCLO-DT RAPID CITY SOUTH DAKOTA  
CHANNEL 16 150 KW ERP 154 METERS HAAT  
OCTOBER 2004  
(continued)

<u>Radial</u> N ° E, T	Effective <u>Height</u> meters	Average <u>Elevation</u> meters	<u>ERP</u> kW	<u>Distance to Contour</u>	
				<u>48 dBu</u> km	<u>41 dBu</u> km
290	34.0	1232.0	9.4	31.3	38.5
300	51.9	1214.1	6.7	34.8	42.4
310	53.2	1212.8	26.8	41.8	49.0
320	103.8	1162.2	61.8	53.4	60.7
330	177.9	1088.1	96.9	61.2	68.5
340	195.6	1070.4	122.0	63.4	70.8
350	217.6	1048.4	139.0	65.3	73.0



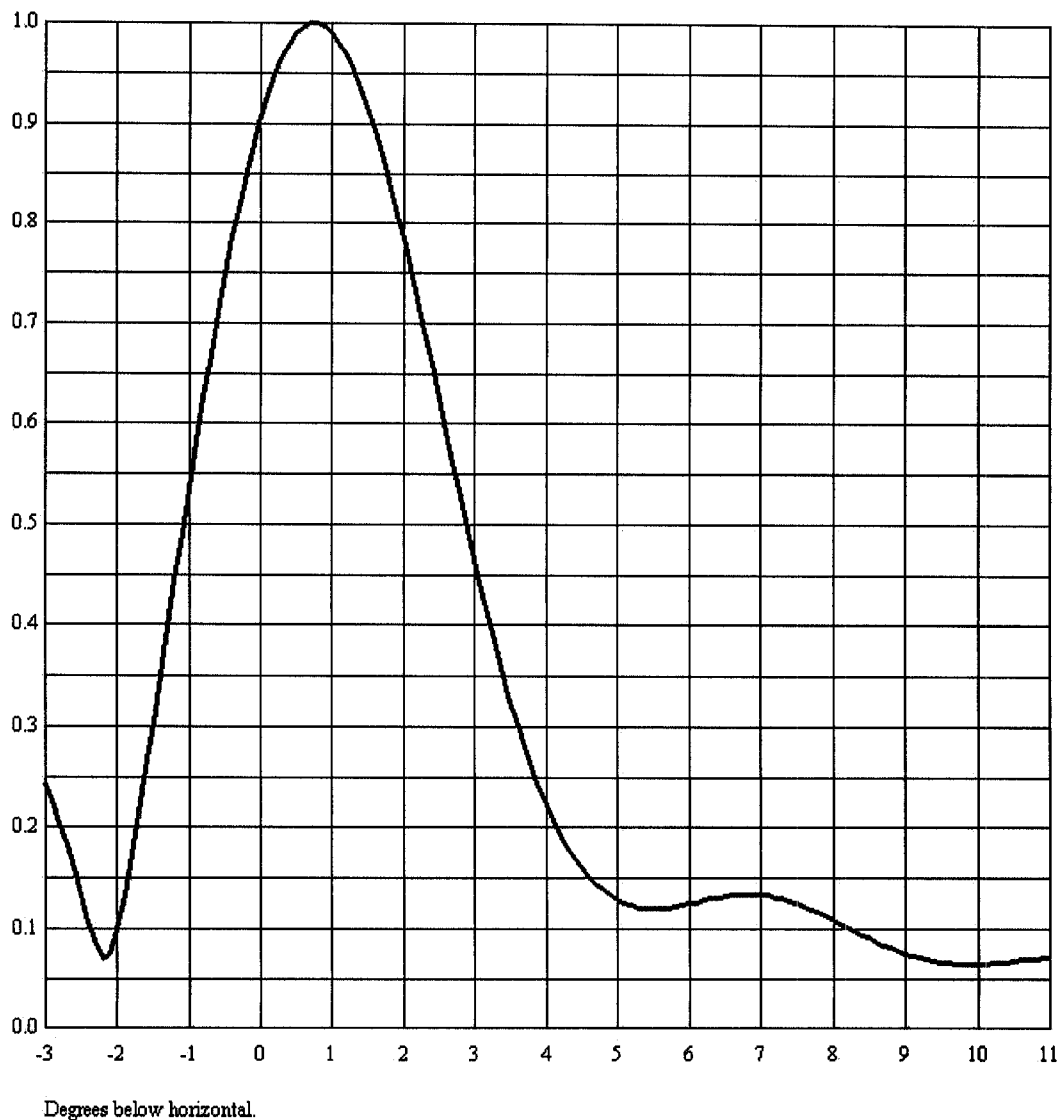


Specification Number  
Date  
Call Letters  
Channel  
Location  
Antenna Type  
Customer

EXHIBIT E - 2A  
**1069:3:073254**  
**November 22, 2002**  
**KCLO**  
**DT16**  
**Rapid City, SD**  
**TFU-20GTH-R CT160 DC**  
**Young Broadcasting Inc.**

### Elevation Pattern

RMS Gain at Main Lobe	<b>16.5</b>	<b>12.17 dB</b>	Beam Tilt	<b>0.75 degrees</b>
RMS Gain at Horizontal	<b>13.5</b>	<b>11.30 dB</b>	Frequency	<b>485 MHz</b>
Calculated / Measured	<b>Calculated</b>		Drawing#	<b>20G165075d-90</b>





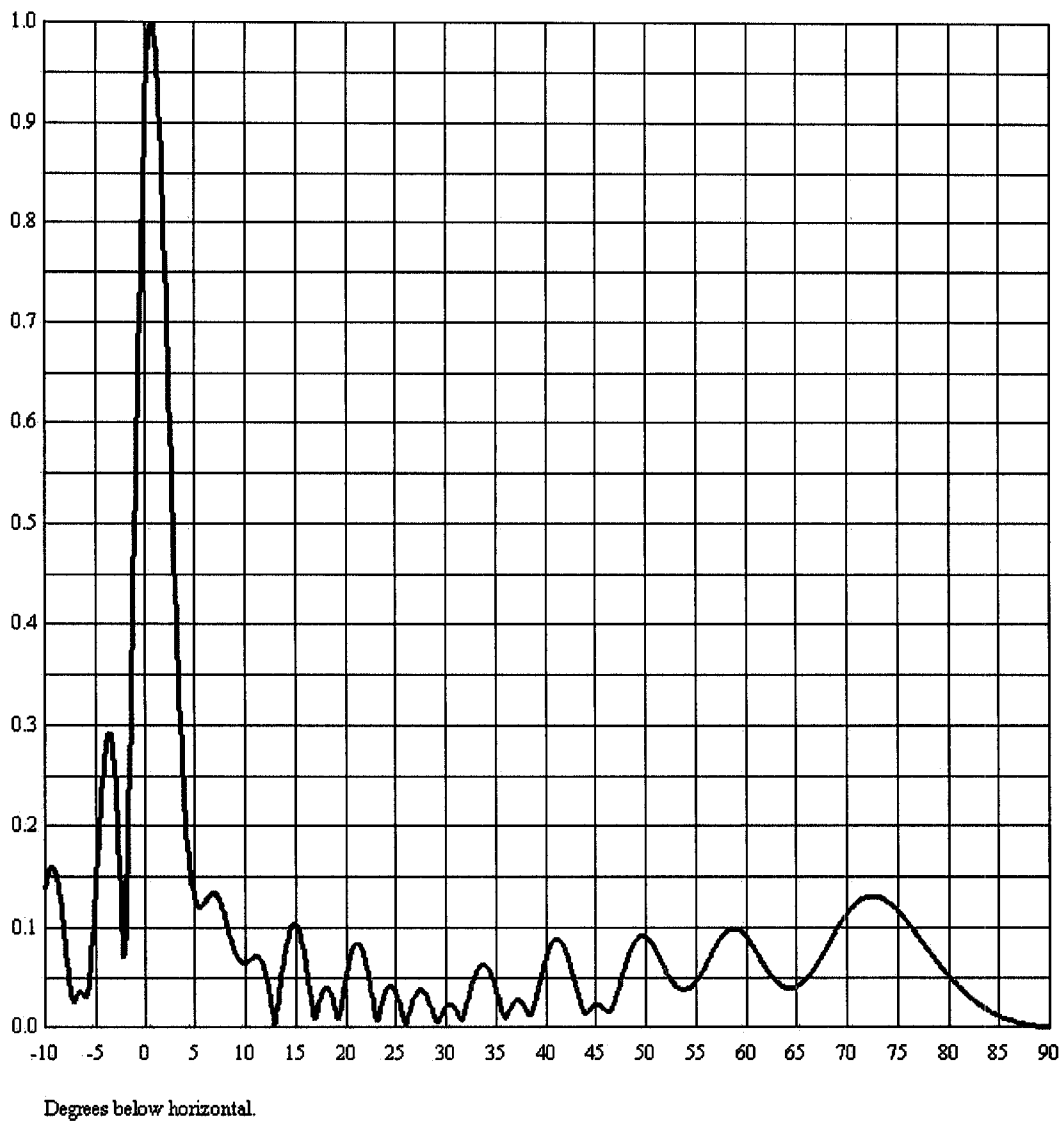
Specification Number  
Date  
Call Letters  
Channel  
Location  
Antenna Type  
Customer

**EXHIBIT E - 2B**

**1069:3:073254**  
**November 22, 2002**  
**KCLO**  
**DT16**  
**Rapid City, SD**  
**TFU-20GTH-R CT160 DC**  
**Young Broadcasting Inc.**

**Elevation Pattern**

RMS Gain at Main Lobe	<b>16.5</b>	<b>12.17 dB</b>	Beam Tilt	<b>0.75 degrees</b>
RMS Gain at Horizontal	<b>13.5</b>	<b>11.30 dB</b>	Frequency	<b>485 MHz</b>
Calculated / Measured	<b>Calculated</b>		Drawing#	<b>20G165075d-90</b>



## EXHIBIT E - 2C



Specification Number  
Date  
Call Letters  
Channel  
Location  
Antenna Type  
Customer

**1069:3:073254**  
**November 22, 2002**  
**KCLO**  
**DT16**  
**Rapid City, SD**  
**TFU-20GTH-R CT160 DC**  
**Young Broadcasting Inc.**

## TABULATION OF ELEVATION PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.138	2.4	0.659	10.6	0.069	30.5	0.023	51.0	0.077	71.5	0.128
-9.5	0.158	2.6	0.593	10.8	0.070	31.0	0.017	51.5	0.067	72.0	0.130
-9.0	0.155	2.8	0.527	11.0	0.071	31.5	0.008	52.0	0.057	72.5	0.131
-8.5	0.128	3.0	0.464	11.5	0.068	32.0	0.019	52.5	0.048	73.0	0.131
-8.0	0.084	3.2	0.405	12.0	0.055	32.5	0.038	53.0	0.041	73.5	0.129
-7.5	0.038	3.4	0.350	12.5	0.030	33.0	0.053	53.5	0.038	74.0	0.126
-7.0	0.027	3.6	0.302	13.0	0.005	33.5	0.062	54.0	0.038	74.5	0.121
-6.5	0.036	3.8	0.259	13.5	0.043	34.0	0.062	54.5	0.040	75.0	0.117
-6.0	0.030	4.0	0.223	14.0	0.077	34.5	0.053	55.0	0.046	75.5	0.111
-5.5	0.061	4.2	0.193	14.5	0.099	35.0	0.038	55.5	0.053	76.0	0.105
-5.0	0.135	4.4	0.169	15.0	0.104	35.5	0.019	56.0	0.062	76.5	0.098
-4.5	0.216	4.6	0.151	15.5	0.091	36.0	0.009	56.5	0.072	77.0	0.091
-4.0	0.277	4.8	0.138	16.0	0.065	36.5	0.019	57.0	0.082	77.5	0.085
-3.5	0.291	5.0	0.128	16.5	0.030	37.0	0.027	57.5	0.090	78.0	0.078
-3.0	0.243	5.2	0.123	17.0	0.009	37.5	0.026	58.0	0.095	78.5	0.071
-2.8	0.205	5.4	0.120	17.5	0.030	38.0	0.018	58.5	0.099	79.0	0.064
-2.6	0.158	5.6	0.120	18.0	0.040	38.5	0.012	59.0	0.099	79.5	0.058
-2.4	0.106	5.8	0.122	18.5	0.034	39.0	0.027	59.5	0.096	80.0	0.052
-2.2	0.070	6.0	0.125	19.0	0.014	39.5	0.049	60.0	0.091	80.5	0.046
-2.0	0.099	6.2	0.128	19.5	0.019	40.0	0.068	60.5	0.084	81.0	0.041
-1.8	0.172	6.4	0.131	20.0	0.049	40.5	0.082	61.0	0.076	81.5	0.036
-1.6	0.258	6.6	0.133	20.5	0.072	41.0	0.089	61.5	0.067	82.0	0.031
-1.4	0.350	6.8	0.134	21.0	0.084	41.5	0.086	62.0	0.059	82.5	0.027
-1.2	0.444	7.0	0.134	21.5	0.081	42.0	0.076	62.5	0.051	83.0	0.023
-1.0	0.536	7.2	0.131	22.0	0.064	42.5	0.060	63.0	0.046	83.5	0.020
-0.8	0.626	7.4	0.127	22.5	0.037	43.0	0.041	63.5	0.042	84.0	0.017
-0.6	0.709	7.6	0.122	23.0	0.009	43.5	0.022	64.0	0.040	84.5	0.014
-0.4	0.785	7.8	0.116	23.5	0.020	44.0	0.014	64.5	0.040	85.0	0.012
-0.2	0.851	8.0	0.109	24.0	0.037	44.5	0.019	65.0	0.041	85.5	0.010
0.0	0.906	8.2	0.101	24.5	0.042	45.0	0.023	65.5	0.044	86.0	0.008
0.2	0.949	8.4	0.094	25.0	0.035	45.5	0.022	66.0	0.049	86.5	0.006
0.4	0.979	8.6	0.087	25.5	0.019	46.0	0.017	66.5	0.055	87.0	0.005
0.6	0.996	8.8	0.081	26.0	0.001	46.5	0.017	67.0	0.063	87.5	0.003
0.8	1.000	9.0	0.075	26.5	0.020	47.0	0.029	67.5	0.071	88.0	0.002
1.0	0.991	9.2	0.071	27.0	0.033	47.5	0.046	68.0	0.080	88.5	0.002
1.2	0.969	9.4	0.068	27.5	0.037	48.0	0.063	68.5	0.089	89.0	0.001
1.4	0.936	9.6	0.066	28.0	0.033	48.5	0.077	69.0	0.098	89.5	0.000
1.6	0.894	9.8	0.065	28.5	0.021	49.0	0.087	69.5	0.106	90.0	0.000
1.8	0.843	10.0	0.065	29.0	0.006	49.5	0.091	70.0	0.114		
2.0	0.786	10.2	0.066	29.5	0.011	50.0	0.091	70.5	0.120		
2.2	0.724	10.4	0.067	30.0	0.021	50.5	0.086	71.0	0.125		



Specification Number  
Date  
Call Letters  
Channel  
Location  
Antenna Type  
Customer

# EXHIBIT E - 2D

1069:3:073254  
November 22, 2002  
KCLO  
DT16  
Rapid City, SD  
TFU-20GTH-R CT160 DC  
Young Broadcasting Inc.

## Azimuth Pattern

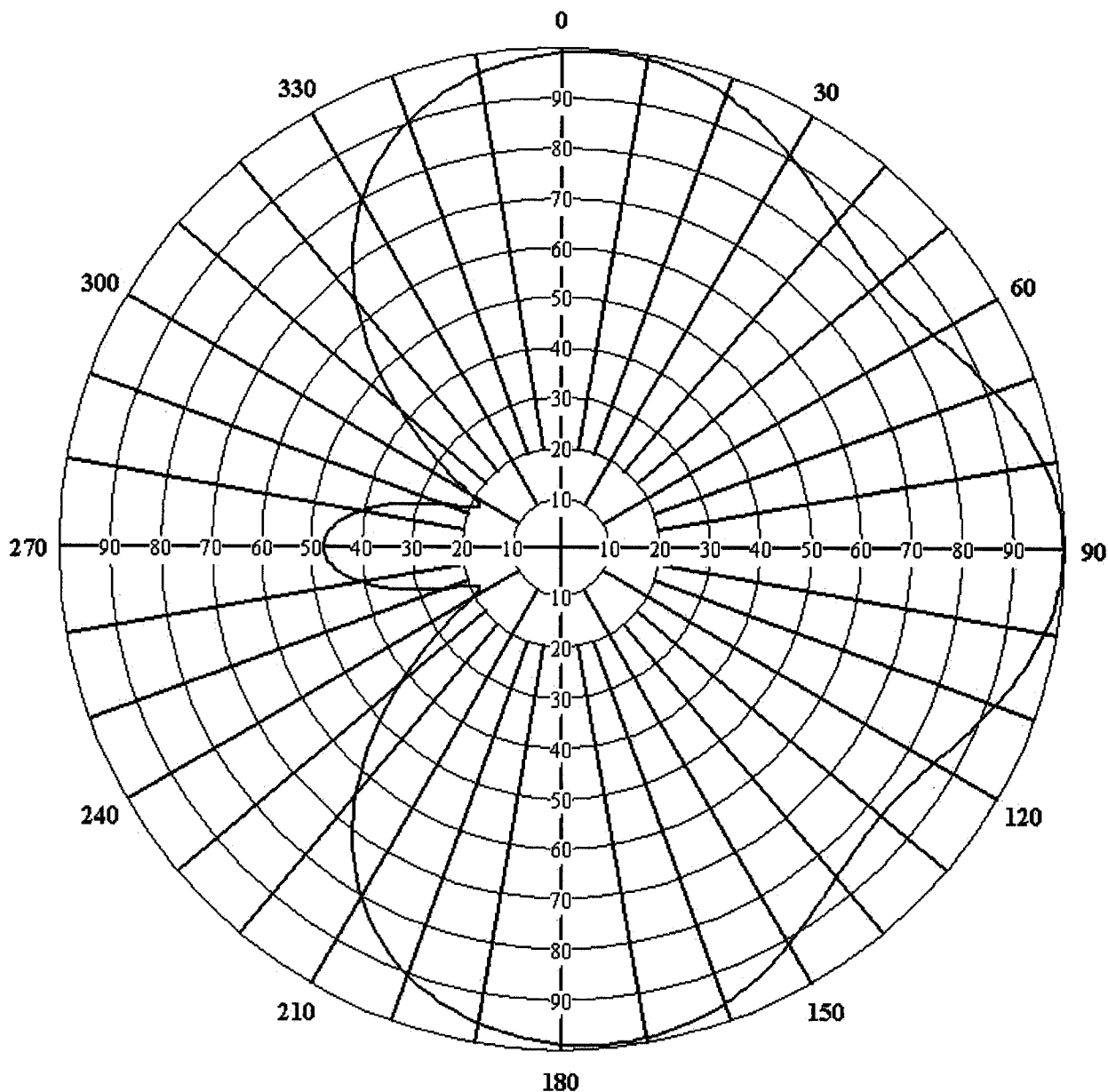
Gain  
Calculated / measured

1.6  
Calculated

(2.04dB)

Frequency  
Drawing#

485 MHz  
TFU-CT160-16





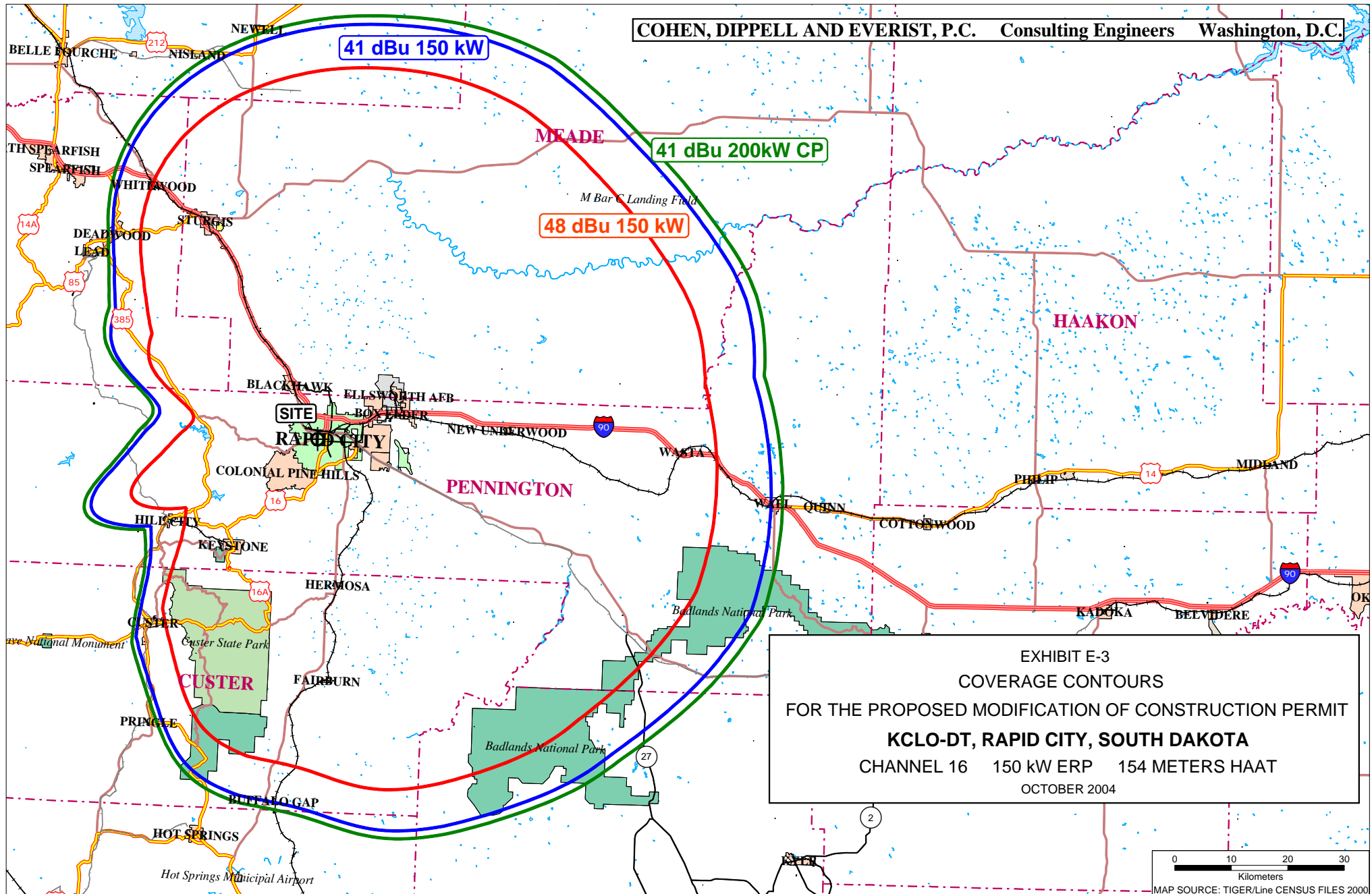
# EXHIBIT E - 2E

Specification Number  
Date  
Call Letters  
Channel  
Location  
Antenna Type  
Customer

1069:3:073254  
November 22, 2002  
KCLO  
DT16  
Rapid City, SD  
TFU-20GTH-R CT160 DC  
Young Broadcasting Inc.

## TABULATION OF AZIMUTH PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.990	45	0.837	90	1.000	135	0.837	180	0.990	225	0.536	270	0.477	315	0.536
1	0.991	46	0.835	91	1.000	136	0.840	181	0.988	226	0.514	271	0.476	316	0.559
2	0.993	47	0.833	92	0.999	137	0.844	182	0.987	227	0.491	272	0.475	317	0.580
3	0.993	48	0.832	93	0.998	138	0.847	183	0.984	228	0.468	273	0.471	318	0.601
4	0.994	49	0.831	94	0.996	139	0.851	184	0.982	229	0.445	274	0.466	319	0.621
5	0.994	50	0.830	95	0.994	140	0.856	185	0.979	230	0.421	275	0.460	320	0.641
6	0.995	51	0.831	96	0.991	141	0.860	186	0.976	231	0.398	276	0.453	321	0.660
7	0.994	52	0.831	97	0.988	142	0.865	187	0.973	232	0.374	277	0.443	322	0.678
8	0.994	53	0.833	98	0.985	143	0.871	188	0.970	233	0.351	278	0.434	323	0.696
9	0.993	54	0.835	99	0.981	144	0.876	189	0.966	234	0.327	279	0.422	324	0.713
10	0.992	55	0.837	100	0.976	145	0.882	190	0.962	235	0.305	280	0.411	325	0.729
11	0.990	56	0.840	101	0.972	146	0.888	191	0.958	236	0.283	281	0.397	326	0.746
12	0.989	57	0.844	102	0.967	147	0.894	192	0.953	237	0.263	282	0.383	327	0.761
13	0.987	58	0.847	103	0.961	148	0.899	193	0.948	238	0.242	283	0.367	328	0.775
14	0.984	59	0.852	104	0.956	149	0.905	194	0.943	239	0.226	284	0.352	329	0.789
15	0.982	60	0.856	105	0.950	150	0.911	195	0.937	240	0.209	285	0.335	330	0.803
16	0.979	61	0.862	106	0.944	151	0.917	196	0.932	241	0.199	286	0.318	331	0.815
17	0.975	62	0.867	107	0.937	152	0.923	197	0.925	242	0.188	287	0.301	332	0.827
18	0.972	63	0.873	108	0.931	153	0.929	198	0.919	243	0.186	288	0.283	333	0.839
19	0.968	64	0.879	109	0.924	154	0.934	199	0.912	244	0.183	289	0.266	334	0.850
20	0.964	65	0.885	110	0.918	155	0.940	200	0.904	245	0.189	290	0.249	335	0.860
21	0.960	66	0.891	111	0.911	156	0.945	201	0.896	246	0.194	291	0.233	336	0.870
22	0.955	67	0.898	112	0.904	157	0.950	202	0.888	247	0.206	292	0.218	337	0.879
23	0.950	68	0.904	113	0.898	158	0.955	203	0.879	248	0.218	293	0.206	338	0.888
24	0.945	69	0.911	114	0.891	159	0.960	204	0.870	249	0.233	294	0.194	339	0.896
25	0.940	70	0.918	115	0.885	160	0.964	205	0.860	250	0.249	295	0.189	340	0.904
26	0.934	71	0.924	116	0.879	161	0.968	206	0.850	251	0.266	296	0.183	341	0.912
27	0.929	72	0.931	117	0.873	162	0.972	207	0.839	252	0.283	297	0.186	342	0.919
28	0.923	73	0.937	118	0.867	163	0.975	208	0.827	253	0.301	298	0.188	343	0.925
29	0.917	74	0.944	119	0.862	164	0.979	209	0.815	254	0.318	299	0.199	344	0.932
30	0.911	75	0.950	120	0.856	165	0.982	210	0.803	255	0.335	300	0.209	345	0.937
31	0.905	76	0.956	121	0.852	166	0.984	211	0.789	256	0.352	301	0.226	346	0.943
32	0.899	77	0.961	122	0.847	167	0.987	212	0.775	257	0.367	302	0.242	347	0.948
33	0.894	78	0.967	123	0.844	168	0.989	213	0.761	258	0.383	303	0.262	348	0.953
34	0.888	79	0.972	124	0.840	169	0.990	214	0.746	259	0.397	304	0.283	349	0.958
35	0.882	80	0.976	125	0.837	170	0.992	215	0.729	260	0.411	305	0.305	350	0.962
36	0.876	81	0.981	126	0.835	171	0.993	216	0.713	261	0.422	306	0.327	351	0.966
37	0.871	82	0.985	127	0.833	172	0.994	217	0.696	262	0.434	307	0.351	352	0.970
38	0.865	83	0.988	128	0.831	173	0.994	218	0.678	263	0.443	308	0.374	353	0.973
39	0.860	84	0.991	129	0.831	174	0.995	219	0.660	264	0.453	309	0.398	354	0.976
40	0.856	85	0.994	130	0.830	175	0.994	220	0.641	265	0.460	310	0.421	355	0.979
41	0.851	86	0.996	131	0.831	176	0.994	221	0.621	266	0.466	311	0.445	356	0.982
42	0.847	87	0.998	132	0.832	177	0.993	222	0.601	267	0.471	312	0.468	357	0.984
43	0.844	88	0.999	133	0.833	178	0.993	223	0.580	268	0.475	313	0.491	358	0.987
44	0.840	89	1.000	134	0.835	179	0.991	224	0.559	269	0.476	314	0.514	359	0.988




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 October 29, 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).

## 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.**