

ENGINEERING STATEMENT  
RE DTV BROADCAST ENGINEERING DATA  
APPLICATION FOR MODIFICATION OF  
CONSTRUCTION PERMIT  
**KTUZ-DT, SHAWNEE, OKLAHOMA**  
CHANNEL 29 1000 KW ND ERP 474 METERS HAAT

JUNE 2008

COHEN, DIPPELL AND EVERIST, P.C.  
CONSULTING ENGINEERS  
RADIO AND TELEVISION  
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington )  
 ) ss  
District of Columbia )

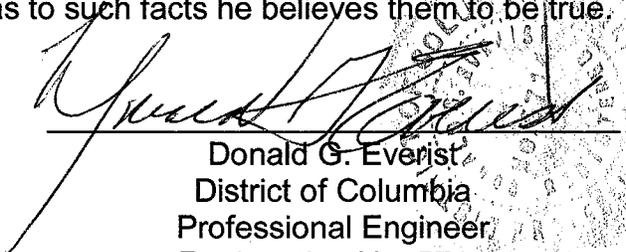
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

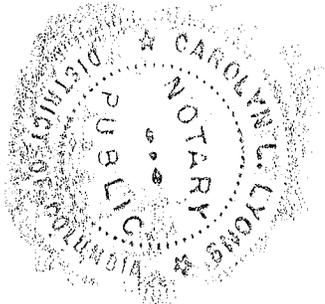
That his qualifications are a matter of record in the Federal Communications Commission;

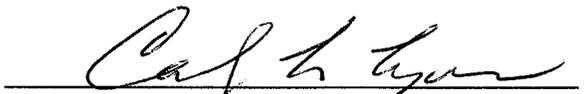
That the attached engineering report was prepared by him or under his supervision and direction and

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

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

Subscribed and sworn to before me this 19<sup>th</sup> day of June, 2008.



  
Notary Public

My Commission Expires: 2/28/2013

This engineering statement has been prepared in support of an application for construction permit for maximization of DT facility on behalf of Oklahoma Land Company, LLC, licensee of KTUZ-DT, Shawnee, Oklahoma. This submission is in accordance with the provisions announced in the FCC Public Notice dated May 30, 2008.<sup>1</sup>

KTUZ-TV is licensed to operate on NTSC television Channel 30 with a maximum visual effective radiated power of 5000 kW and a HAAT of 253 meters. KTUZ-DT has a license for DTV Channel 29 with facilities of 770 kW and HAAT 474 meters. In the instant application, KTUZ-DT proposes to construct DT facilities of 1000 kW (non-directional) at the current licensed transmitter site with an HAAT of 474 meters.

There are two AM stations located within 3.2 km of the proposed transmitter site. There are also six FM stations KYIS(FM), KMGL(FM), KOMA(FM), WWLS-FM, KATT-FM and KRX(FM) and one NTSC station authorized within 100 meters of the proposed co-located KTUZ-DT site. The AM stations will not be affected since there is no new construction or alteration to the tower based on this request.

The DT antenna will be top-mounted on a recently constructed Richland tower. The KTUZ-DT antenna is located on the Richland tower having a total overall structure height above ground of 489 meters (1604 feet). The new transmitter site is located at 1501 NE 85<sup>th</sup> Street. The

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<sup>1</sup>“Commission Lifts the Freeze on the Filing of Maximization Applications and Petitions for Digital Channel Substitutions Effective Immediately”, DA 08-1213, Released May 30, 2008.

registration number for the tower is 1253490 and a vertical diagram of the tower is shown as Exhibit E-1.

The geographic coordinates of the proposed site are as follows:

North Latitude: 35° 33' 36"

West Longitude: 97° 29' 07"

NAD-27

Equipment Data

Antenna: ERI, Type ATW27H5-HTO-29H (or equivalent) non-directional antenna with 1.25° electrical beam tilt. The vertical plane pattern and other exhibits required by Section 73.625(c) are herein included as Exhibit E-2.

Transmission Line: 533.4 meters (1750 ft) of ERI, Type MACX775B, 75 ohm or equivalent

Power Data

Transmitter output	52.08 kW	17.23 dBk
Transmission line loss	70.15 %	1.54 dB
Input power to the antenna	37.04 kW	15.69 dBk
Antenna power gain,	27	14.31 dB
Non-Directional Effective Radiated Power	1000 kW	30 dBk

Elevation Data

Vertical dimension for Channel 29 antenna	16.8 meters 55.2 feet
Overall height above ground of the	489 meters

proposed antenna structure (including beacon)	1604 feet
Center of radiation of Channel 29 antenna above ground	478.5 meters 1570 feet
Elevation of site above mean sea level	349 meters 1145 feet
Center of radiation of Channel 29 antenna above mean sea level	827.5 meters 2715 feet
Overall height above mean sea level of tower and top-mounted antenna (including beacon)	838 meters 2749 feet
Antenna height above average terrain	474 meters

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

#### Allocation

An allocation study from the proposed site has not been performed as there is no change in channel from that specified in revised Appendix B.

#### Longley-Rice Analysis

Longley-Rice analysis demonstrates that the proposed relocated KTUZ-DT operation does not cause excess interference to any facility that currently requires protection based on the post-transition data base.

The attached tables identify in detail the additional stations potentially impacted by the proposed KTUZ-DT operation referenced above. Table I shows the amount of new interference predicted to be caused by the proposed KTUZ-DT operation to all post-transition DT facilities. As

herein demonstrated, KTUZ-DT facility does not cause new interference in excess of 0.5% to any post-transition facility.

To perform this study, a version of the Longley-Rice program described in OET Bulletin No. 69 (July 2, 1997) and the Public Notice, "Additional Application Processing Guidelines for Digital Television (DTV)" (August 1998) was executed. This version uses the FCC's FORTRAN-77 code that has been modified only to the extent necessary (primarily I/O handling) for the program to run on a Windows XP/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, such as calculating new interference as total interference less baseline interference. Any variance effect is further reduced when using ratios of calculated population values such as measuring the incremental population affected as a percent of the 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 2000 census centroids.

#### Coverage

The average elevation data for 3.2 to 16.1 km along each radial are based upon the 3-second NGDC profile data at every 45 degrees in azimuth starting at N 0°ET.

The F(50,90) NTSC coverage contour has been computed from reference to the propagation data for Channels 14-69, as published by the FCC in Figures 10a and 10b , Section 73.699 of the FCC Rules and Regulations.

Utilizing the formula in Section 73.625(b)(2) of the Rules for the effective heights, it is found that the depression angle,  $A_h$ , varies from 0.596 to 0.624 degrees. Since the relative vertical field is greater than 90% of the maximum at these depression angles, the maximum power was used in determining the distance to the 48 dBu contour.

Table II includes the distances to the 48 dBu and 41 dBu F(50,90) coverage contour, the average elevation 3.2 to 16.1 km, and the antenna height above average terrain for each of the radials. As shown, the predicted 48 dBu contour covers the community of license.

#### Compliance With Section 73.622(f)(5)

The proposed effective radiated power of 1000 kW is in compliance with Section 73.622(f)(5) of the FCC Rules as the predicted 41 dBu service area is totally contained within KFOR-TV NTSC Grade B service area. Exhibit E-4 provides the relevant contours.

#### Other Licensed and Broadcast Facilities

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

#### Radiofrequency Field ("RFF") Assessment

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

**FM Broadcast Stations**

$$S = [(33.4)(F^2)(0.4 * ERP)]/R^2$$

**Digital Television Broadcast Stations**

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

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

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

ERP<sub>v</sub> = Total Peak Visual ERP in Watts

ERP<sub>A</sub> = Total Aural ERP in Watts

ERP = Power in Watts

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

As previously indicated, there are two AM stations located within 3.2 km of the proposed tower site. According to the FCC data base, there are six FM stations and one NTSC TV station located within 100 meters aside from the proposed operation of KTUZ-DT. The proposed tower site is located is at 1501 NE 85<sup>th</sup> Street. Access to the tower property will be prevented by a chain link fence with a locked gate.

For DTV operation KTUZ-DT proposes to use an ERI, Type ATW27H5-HTO-29H or equivalent horizontally polarized antenna with 1000 kW ERP and 1.25° electrical beam tilt and a radiation center of 478.5 meters above ground. The elevation pattern for this antenna shows a maximum relative field of 0.1 or less towards the ground (10° to 90° below the horizontal) in the vicinity of the tower. Using this relative field factor and the procedures prescribed in OET Bulletin 65 (Edition 97-01 and Supplement A), the maximum RFF resulting from the proposed operation is less than 1.5  $\mu\text{W}/\text{cm}^2$  two meters above ground. This is less than 0.5% of the 375.3  $\mu\text{W}/\text{cm}^2$  maximum human exposure to RFF recommended by the current FCC guidelines for the general population.

The following table will summarize predicted RFF from the remaining FM and television stations authorized to operate within 100 meters of the proposed site.

<u>Station Status</u>	<u>Channel</u>	<u>ERP</u> kW	Assumed Downward Relative <u>Field</u>	<u>RCAGL-2</u> meters	Predicted <u>RFF</u> $\mu\text{W}/\text{cm}^2$	Uncontrolled <u>MPE</u> $\mu\text{W}/\text{cm}^2$	<u>%Uncontrolled</u>
KTUZ-TV CP	30	5000 (H)	0.2	411	20	527	3.8
All 6 Fms	233-299	100* (H+V)	0.3	474.5	16	200	<10

\*Assume Maximum ERP

Therefore, the total contribution by the operations within 100 meters of the proposed site at 2 meters above ground level is less than 15% 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 radio frequency field ("RFF") guidelines, and thus, complies with Section 1.1307 of the FCC Rules. Provisions will be made to reduce power or to terminate the transmitter emissions, as appropriate, when it is necessary for authorized personnel to be on the tower.

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

Environmental Assessment

This tower underwent an environmental assessment (“EA”) in accordance with WT Docket No. 03-128 and the licensee indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.
- (a)(2) The existing tower is 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 are located on a tower which was recently constructed and complies with the provisions of WT Docket No. 03-128 and was found not to affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing guyed tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) No lighting changes are proposed unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

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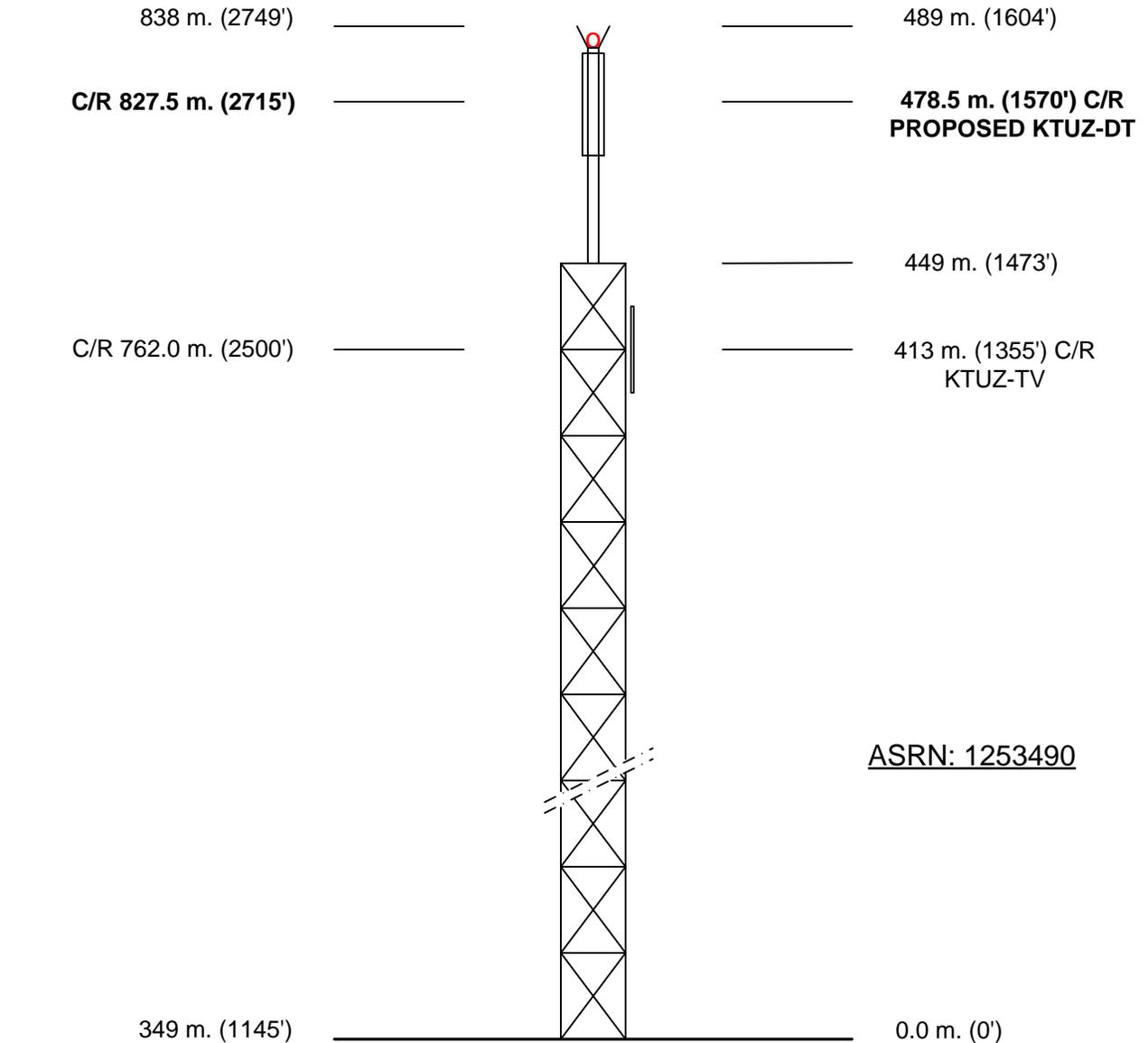
TABLE I  
LONGLEY-RICE INTERFERENCE ANALYSIS  
FOR THE PROPOSED OPERATION  
ABOVE ITS ALLOTTED APPENDIX B FACILITIES AND  
IN RELATION TO OTHER ALLOTTED APPENDIX B FACILITIES  
AND OTHER POTENTIALLY AFFECTED STATIONS IN CDBS  
KTUZ-DT, SHAWNEE, OKLAHOMA  
CHANNEL 29 1000 KW ND ERP 474 METERS HAAT  
JUNE 2008

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
28	KTPX-DT	OKMULGEE OK	126.6	ALLOT		0.12%
28	KTPX-DT	OKMULGEE OK	126.6	LIC	BLCDDT-20020510AAQ	0.12%
28	KFDX-DT	WICHITA FALLS TX	209.9	CP MOD	BMPCDDT-20070621ABP	no interference
28	KFDX-DT	WICHITA FALLS TX	209.9	ALLOT		no interference
29	KSJA-CA	NASHVILLE AR	378.1	APP	BDISTTA-20070108ABP	no interference
29	K29DZ	TULSA OK	149.8	LIC	BLTTL-19991126AAQ	1.57%*
29	KRBC-DT	ABILENE TX	413.6	LIC	BLCDDT-20070831AAK	no interference
29	KRBC-DT	ABILENE TX	413.6	ALLOT		no interference
36	KCHM-LP	OKLAHOMA CITY OK	21.3	APP	BMPTTA-20050707AAW	no interference
36	KCHM-LP	OKLAHOMA CITY OK	1	CP	BMJPTTA-20040504ABL	0.00%

\*Interference predicted considering only post-transition DTV masking. However, inclusion of existing masking from stations in CDBS consistent with current FCC policy decreases predicted interference to 0.00%.

ABOVE MEAN SEA LEVEL

ABOVE GROUND



(NOT TO SCALE)

EXHIBIT E - 1  
PROPOSED TOWER WITH  
CANDLEABRA TOP FOR  
**KTUZ-DT, SHAWNEE, OKLAHOMA**  
JUNE 2008

COHEN, DIPPELL AND EVERIST, P.C.

EXHIBIT E-2

ANTENNA MANUFACTURER DATA

KTUZ-DT, SHAWNEE, OKLAHOMA

**FINAL SPECIFICATION FOR  
TRASAR<sup>®</sup> HORIZONTALLY POLARIZED  
COAXIAL SLOTTED ARRAY ANTENNA**

*Prepared for  
KTUZ-DT Channel 29 Shawnee, OK  
February 8, 2007*

**ANTENNA TYPE:  
ATW27H5-HTO-29H**

**SPECIFICATION NO :  
KO062906-1629 RevD**



**FINAL SPECIFICATION FOR  
TRASAR<sup>®</sup> HORIZONTALLY POLARIZED  
COAXIAL SLOTTED ARRAY ANTENNA**

**ELECTRICAL CHARACTERISTICS:**

CHANNEL :	DTV:	29
FREQUENCY RANGE :	DTV:	560 - 566 MHz
AZIMUTH PATTERN NUMBER :		ATW-O
ELEVATION PATTERN NUMBER :		ATW27H5H
AZIMUTH DIRECTIVITY :		1.00 (0.00 dBd)
ELEVATION DIRECTIVITY :		27.00 (14.31 dBd)
PEAK POWER GAIN :		27.00 (14.31 dBd)
GAIN AT HORIZONTAL :		6.12 (7.87 dBd)
ELECTRICAL BEAM TILT :		1.25 Degrees
INPUT POWER REQUIRED :		37.04 kW (15.69 dBk)
INPUT TYPE :		7 3/16-75 Ohm
INPUT POWER (MAXIMUM) :		60 kW Average, 8VSB Digital
ANTENNA VSWR (MAXIMUM) :	DTV:	1.10 Over 6MHz Channel

## FINAL SPECIFICATION FOR TRASAR<sup>®</sup> HORIZONTALLY POLARIZED COAXIAL SLOTTED ARRAY ANTENNA

### MECHANICAL CHARACTERISTICS:

#### MOUNTING CONFIGURATION:

Top Mount

\*(Tower Interface supplied and installed by others)

HEIGHT OF ANTENNA :

51.90 feet

HEIGHT OF CENTER OF RADIATION (B) :

25.95 feet

OVERALL HEIGHT (A) :

55.15 feet

(Includes two 3.25-foot Lightning Rods)

DEICING :

Pressurized Radome Enclosure

RADOME DIAMETER (C):

14.40 inches, OD

RADOME COLOR :

AVIATION ORANGE (Standard)

CLIMBING DEVICE :

Galvanized Climbing Pole

CALCULATED WEIGHT (No Ice) :

9380.0 lbs

WINDLOAD DATA:

**EIA/TIA-222-F<sup>2</sup>**

CaAc :

**No Ice****/ Factored Radial Ice**

57.0 sq.ft.

72.3 sq.ft.

EFF MOMENT ARM:

29.2 feet

30.7 feet

WEIGHT w/ FACTORED RADIAL ICE (0.5" ice):

10015.0 lbs

**TIA-222-G<sup>3</sup>**

(EPA)A:

53.6 sq.ft.

133.2 sq.ft.

EFF MOMENT ARM:

29.4 feet

28.6 feet

WEIGHT w/ FACTORED RADIAL ICE (tiz = 2.1"):

12610.0 lbs

FLANGE DIMENSIONS:

BOLT CIRLE :

21.50 in.

BOLT DIAMETER:

1.25 in.

NO. OF BOLTS:

16

**This antenna is designed to be supported by a structure that can resist the antenna base reactions and which provides a support that is rigid in the three translational and three rotational degrees of freedom.**

1 Calculated weight is based on the **PRELIMINARY** design of the antenna. The actual weight of the antenna will be within  $\pm 10\%$  of the calculated weight. The actual weight will be given in the technical manual that accompanies the antenna. This figure is for the antenna only and does not include the antenna input section.

2 Based on a wind speed of 70 miles per hour (MPH), a height above average terrain (HAAT) of 1,555 feet, and a height above ground level (HAGL) of 1,574 feet per EIA/TIA-222-F.

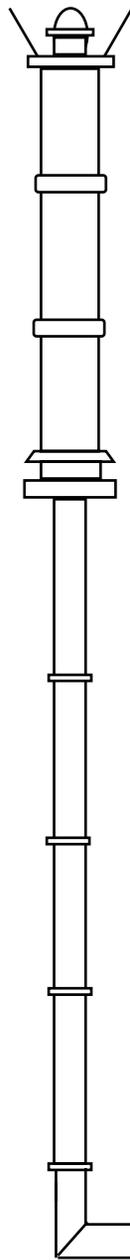
3 Provided loads assume default Structure Classification II, Exposure Category C, and Topographic Category I. Factored escalated ice thickness (tiz) is based on the overall tower height without top mount antenna at 1552 feet and is equal to 2.1 inches. For site specific parameters other than those mentioned above, please contact ERI for revised effective loads. Listed areas include beacon & lightning spurs. These has been calculated using a windspeed of 90MPH and 40 MPH with 0.75" base ice.

**NOTE: Localized conditions may require higher wind speed specifications than TIA/EIA specifications. Check with local authorities to verify wind speed requirements.**

## Broadcast Antenna System Power Analysis

**KTUZ-DT**  
**Shawnee, OK**  
**ATW27H5-HTO-29H**

**Channel 29**



**ANTENNA PARAMETERS :**

**Azimuth Directivity :**

Hor. Pol : 1.00  
dBd : 0.00

**Elevation Directivity :**

Hor. Pol : 27.00  
dBd : 14.31

**TRANSMISSION LINE :**

**VERTICAL RUN :**

Type: MACX775  
Length, ft. : 1550  
Attenuation , dB/100 ft: 0.088

**HORIZONTAL RUN :**

Type: MACX775  
Length, ft. : 200  
Attenuation , dB/100 ft: 0.088

**OTHER LINE LOSSES:**

Type: N/A  
Length, ft. : 0  
Attenuation , dB/100 ft: 0

Line Efficiency : 70.15%

**ERP :**

kW : 1000.00  
dBk : 30.00

**POWER GAIN :**

Ratio : 27.00  
dBd : 14.31

**ANTENNA INPUT :**

kW : 37.04  
dBk : 15.69

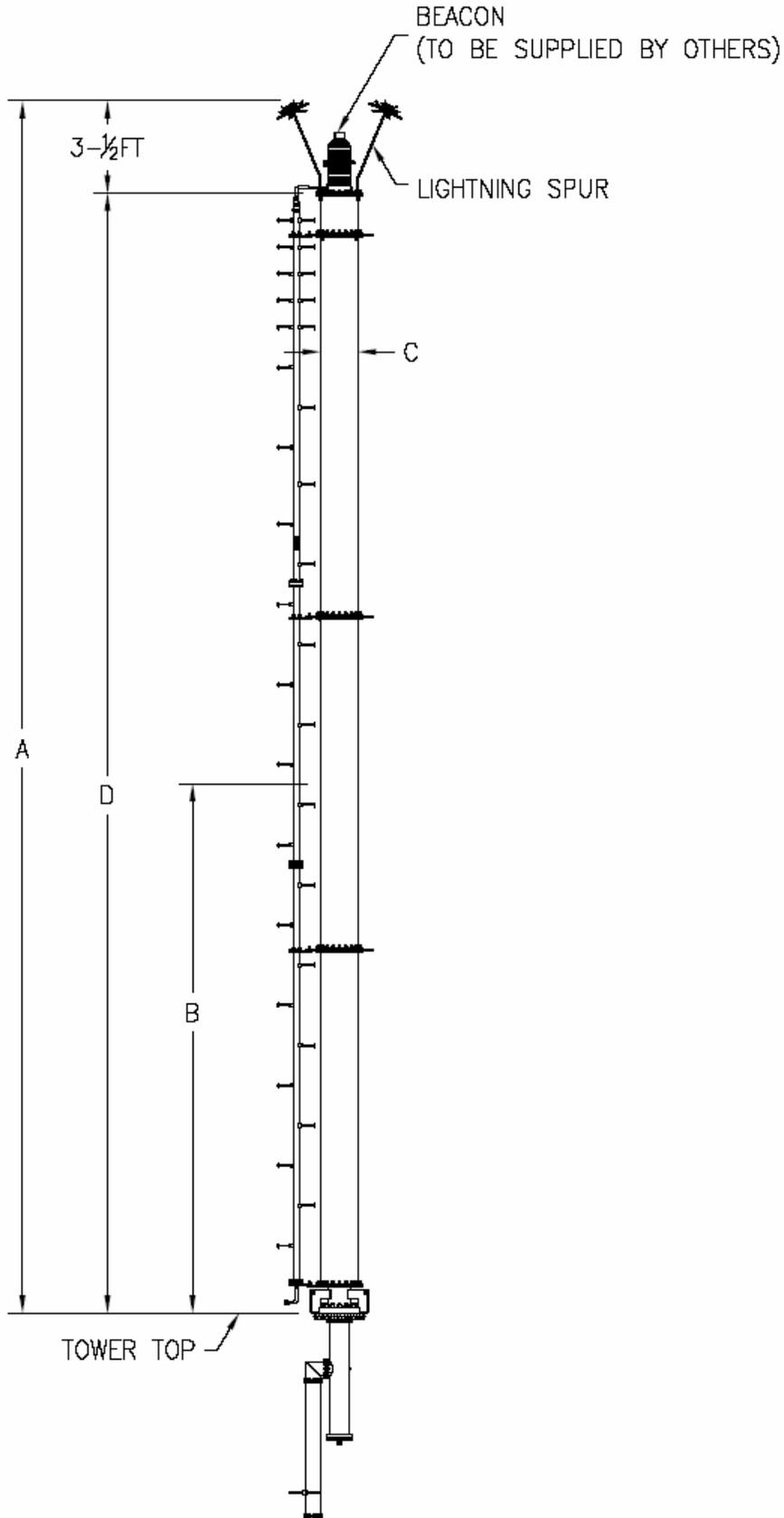
**LINE LOSS :**

kW : 15.76  
dB : 1.54

**TRANSMITTER  
POWER :**

kW : 52.80  
dBk : 17.23

TYPICAL MOUNTING CONFIGURATION SHOWN. ACTUAL CONFIGURATION MAY VARY.



### AZIMUTH PATTERN

**TYPE:** ATW-O

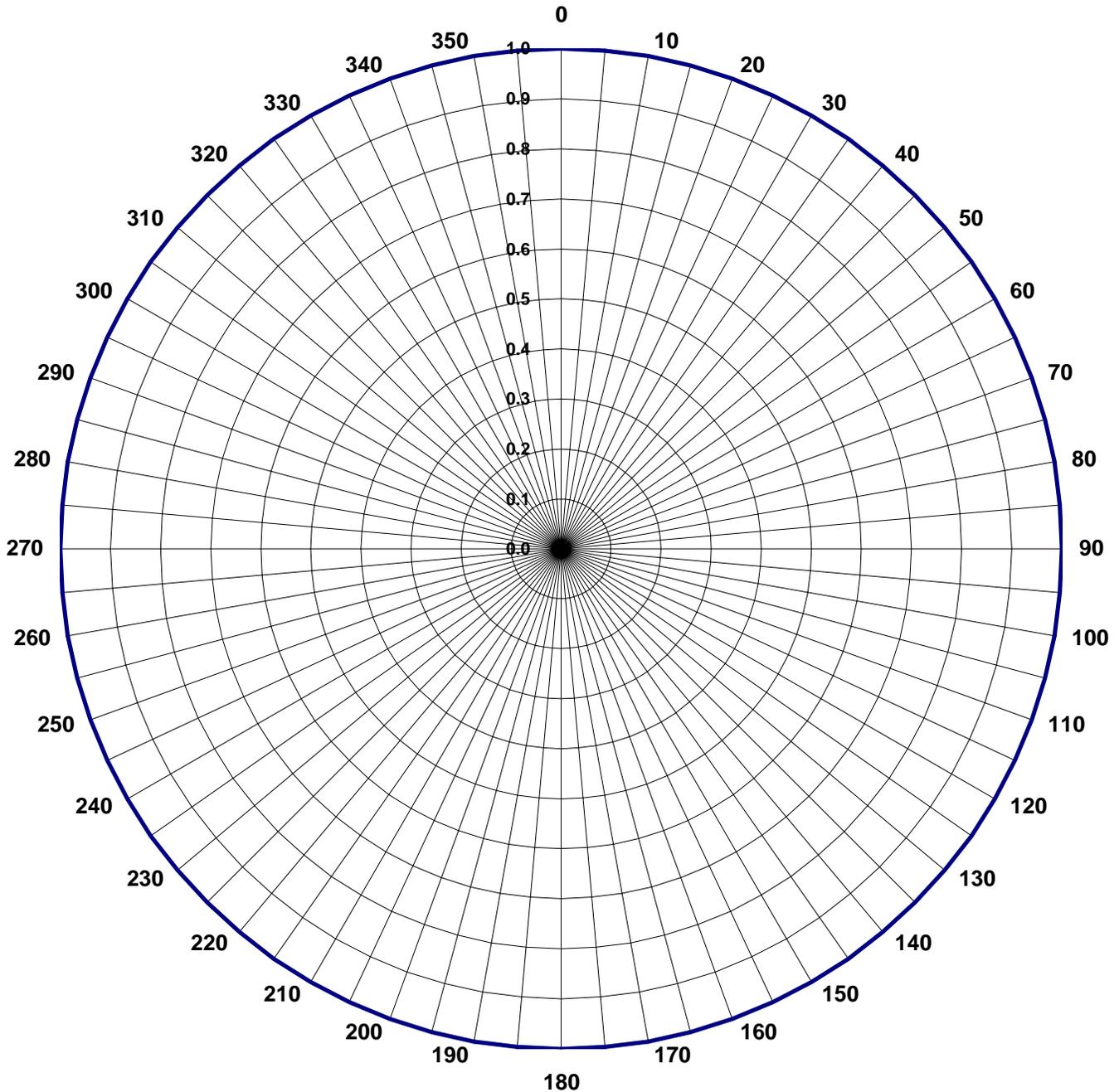
	<u>Numeric</u>	<u>dB</u>
<b>Directivity:</b>	<u>1.00</u>	<u>0.00</u>
<b>Peak(s) at:</b>		

**Frequency:** 29 (DTV)

**Location:** Shawnee, OK

**Polarization:** Horizontal

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



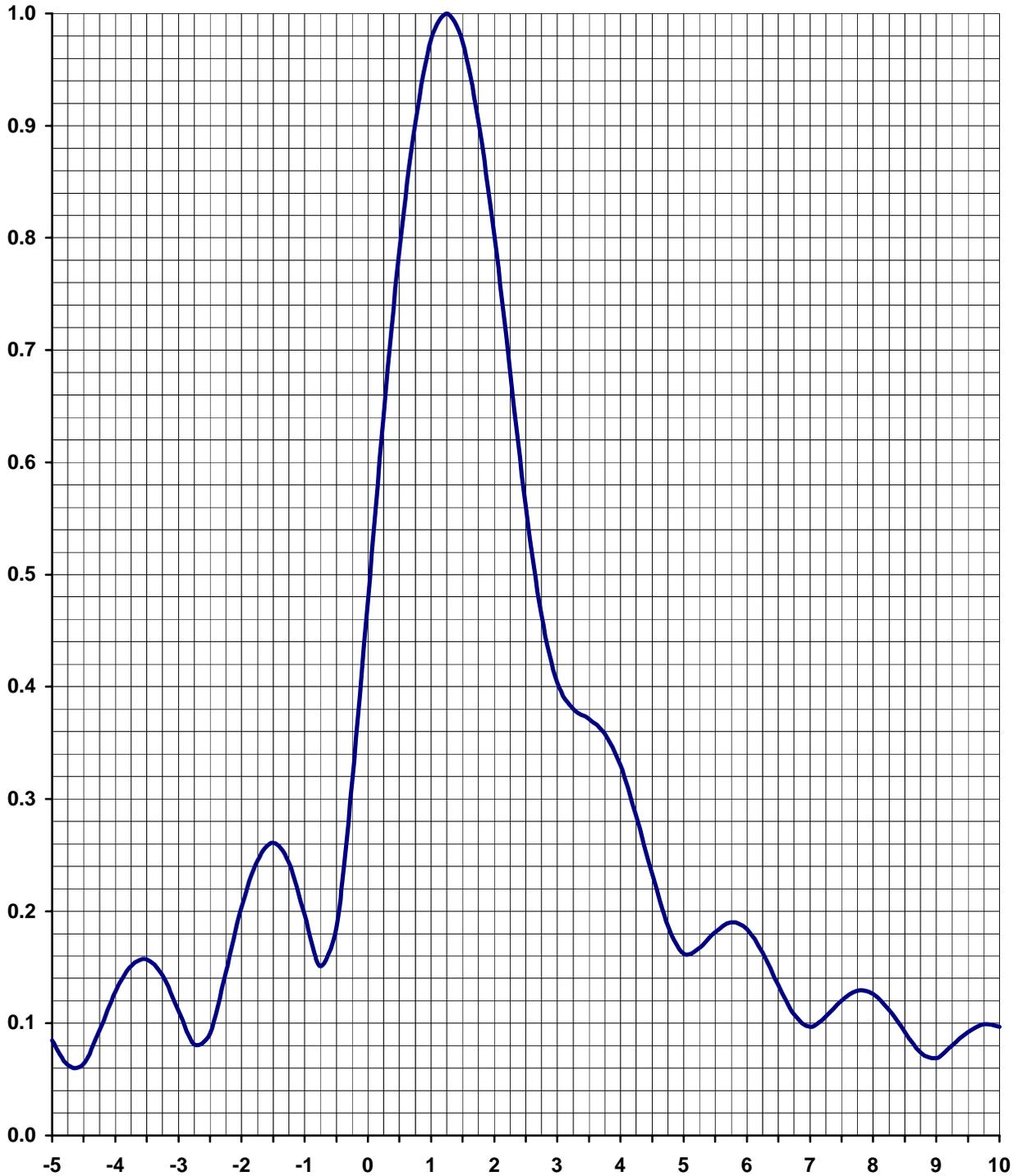
### TABULATED DATA FOR AZIMUTH PATTERN

TYPE: ATW-O

ANGLE	FIELD	dB									
0	1.000	0.00	92	1.000	0.00	184	1.000	0.00	276	1.000	0.00
2	1.000	0.00	94	1.000	0.00	186	1.000	0.00	278	1.000	0.00
4	1.000	0.00	96	1.000	0.00	188	1.000	0.00	280	1.000	0.00
6	1.000	0.00	98	1.000	0.00	190	1.000	0.00	282	1.000	0.00
8	1.000	0.00	100	1.000	0.00	192	1.000	0.00	284	1.000	0.00
10	1.000	0.00	102	1.000	0.00	194	1.000	0.00	286	1.000	0.00
12	1.000	0.00	104	1.000	0.00	196	1.000	0.00	288	1.000	0.00
14	1.000	0.00	106	1.000	0.00	198	1.000	0.00	290	1.000	0.00
16	1.000	0.00	108	1.000	0.00	200	1.000	0.00	292	1.000	0.00
18	1.000	0.00	110	1.000	0.00	202	1.000	0.00	294	1.000	0.00
20	1.000	0.00	112	1.000	0.00	204	1.000	0.00	296	1.000	0.00
22	1.000	0.00	114	1.000	0.00	206	1.000	0.00	298	1.000	0.00
24	1.000	0.00	116	1.000	0.00	208	1.000	0.00	300	1.000	0.00
26	1.000	0.00	118	1.000	0.00	210	1.000	0.00	302	1.000	0.00
28	1.000	0.00	120	1.000	0.00	212	1.000	0.00	304	1.000	0.00
30	1.000	0.00	122	1.000	0.00	214	1.000	0.00	306	1.000	0.00
32	1.000	0.00	124	1.000	0.00	216	1.000	0.00	308	1.000	0.00
34	1.000	0.00	126	1.000	0.00	218	1.000	0.00	310	1.000	0.00
36	1.000	0.00	128	1.000	0.00	220	1.000	0.00	312	1.000	0.00
38	1.000	0.00	130	1.000	0.00	222	1.000	0.00	314	1.000	0.00
40	1.000	0.00	132	1.000	0.00	224	1.000	0.00	316	1.000	0.00
42	1.000	0.00	134	1.000	0.00	226	1.000	0.00	318	1.000	0.00
44	1.000	0.00	136	1.000	0.00	228	1.000	0.00	320	1.000	0.00
46	1.000	0.00	138	1.000	0.00	230	1.000	0.00	322	1.000	0.00
48	1.000	0.00	140	1.000	0.00	232	1.000	0.00	324	1.000	0.00
50	1.000	0.00	142	1.000	0.00	234	1.000	0.00	326	1.000	0.00
52	1.000	0.00	144	1.000	0.00	236	1.000	0.00	328	1.000	0.00
54	1.000	0.00	146	1.000	0.00	238	1.000	0.00	330	1.000	0.00
56	1.000	0.00	148	1.000	0.00	240	1.000	0.00	332	1.000	0.00
58	1.000	0.00	150	1.000	0.00	242	1.000	0.00	334	1.000	0.00
60	1.000	0.00	152	1.000	0.00	244	1.000	0.00	336	1.000	0.00
62	1.000	0.00	154	1.000	0.00	246	1.000	0.00	338	1.000	0.00
64	1.000	0.00	156	1.000	0.00	248	1.000	0.00	340	1.000	0.00
66	1.000	0.00	158	1.000	0.00	250	1.000	0.00	342	1.000	0.00
68	1.000	0.00	160	1.000	0.00	252	1.000	0.00	344	1.000	0.00
70	1.000	0.00	162	1.000	0.00	254	1.000	0.00	346	1.000	0.00
72	1.000	0.00	164	1.000	0.00	256	1.000	0.00	348	1.000	0.00
74	1.000	0.00	166	1.000	0.00	258	1.000	0.00	350	1.000	0.00
76	1.000	0.00	168	1.000	0.00	260	1.000	0.00	352	1.000	0.00
78	1.000	0.00	170	1.000	0.00	262	1.000	0.00	354	1.000	0.00
80	1.000	0.00	172	1.000	0.00	264	1.000	0.00	356	1.000	0.00
82	1.000	0.00	174	1.000	0.00	266	1.000	0.00	358	1.000	0.00
84	1.000	0.00	176	1.000	0.00	268	1.000	0.00	360	1.000	0.00
86	1.000	0.00	178	1.000	0.00	270	1.000	0.00			
88	1.000	0.00	180	1.000	0.00	272	1.000	0.00			
90	1.000	0.00	182	1.000	0.00	274	1.000	0.00			

### ELEVATION PATTERN

<b>TYPE:</b>	<b>ATW27H5H</b>		<b>Frequency:</b>	<b>29 (DTV)</b>
<b>Directivity:</b>	<b>Numeric</b>	<b>dBd</b>	<b>Location:</b>	<b>Shawnee, OK</b>
<b>Main Lobe:</b>	<u>27.00</u>	<u>14.31</u>	<b>Beam Tilt:</b>	<u>1.25</u>
<b>Horizontal:</b>	<u>6.12</u>	<u>7.87</u>	<b>Polarization:</b>	<u>Horizontal</u>



## TABULATED DATA FOR ELEVATION PATTERN

### ATW27H5H

-5 to 10 degrees in 0.25 increments    10 to 90 degrees in 0.50 increments

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
-5.000	0.085	-21.41	6.75	0.108	-19.33	27.00	0.024	-32.40	50.50	0.029	-30.75	74.00	0.011	-39.17
-4.750	0.063	-24.01	7.00	0.097	-20.26	27.50	0.023	-32.77	51.00	0.034	-29.37	74.50	0.006	-44.44
-4.500	0.064	-23.88	7.25	0.106	-19.49	28.00	0.034	-29.37	51.50	0.031	-30.17	75.00	0.012	-38.42
-4.250	0.094	-20.54	7.50	0.120	-18.42	28.50	0.037	-28.64	52.00	0.023	-32.77	75.50	0.019	-34.42
-4.000	0.128	-17.86	7.75	0.129	-17.79	29.00	0.027	-31.37	52.50	0.014	-37.08	76.00	0.027	-31.37
-3.750	0.151	-16.42	8.00	0.126	-17.99	29.50	0.019	-34.42	53.00	0.018	-34.89	76.50	0.033	-29.63
-3.500	0.157	-16.08	8.25	0.112	-19.02	30.00	0.028	-31.06	53.50	0.028	-31.06	77.00	0.037	-28.64
-3.250	0.143	-16.89	8.50	0.092	-20.72	30.50	0.036	-28.87	54.00	0.034	-29.37	77.50	0.041	-27.74
-3.000	0.111	-19.09	8.75	0.074	-22.62	31.00	0.031	-30.17	54.50	0.034	-29.37	78.00	0.042	-27.54
-2.750	0.081	-21.83	9.00	0.069	-23.22	31.50	0.020	-33.98	55.00	0.028	-31.06	78.50	0.043	-27.33
-2.500	0.091	-20.82	9.25	0.080	-21.94	32.00	0.022	-33.15	55.50	0.018	-34.89	79.00	0.042	-27.54
-2.250	0.145	-16.77	9.50	0.092	-20.72	32.50	0.032	-29.90	56.00	0.014	-37.08	79.50	0.041	-27.74
-2.000	0.203	-13.85	9.75	0.099	-20.09	33.00	0.034	-29.37	56.50	0.022	-33.15	80.00	0.038	-28.40
-1.750	0.245	-12.22	10.00	0.097	-20.26	33.50	0.025	-32.04	57.00	0.031	-30.17	80.50	0.035	-29.12
-1.500	0.261	-11.67	10.50	0.069	-23.22	34.00	0.017	-35.39	57.50	0.036	-28.87	81.00	0.032	-29.90
-1.250	0.243	-12.29	11.00	0.054	-25.35	34.50	0.025	-32.04	58.00	0.035	-29.12	81.50	0.028	-31.06
-1.000	0.197	-14.11	11.50	0.075	-22.50	35.00	0.033	-29.63	58.50	0.029	-30.75	82.00	0.024	-32.40
-0.750	0.151	-16.42	12.00	0.078	-22.16	35.50	0.031	-30.17	59.00	0.019	-34.42	82.50	0.020	-33.98
-0.500	0.186	-14.61	12.50	0.056	-25.04	36.00	0.021	-33.56	59.50	0.013	-37.72	83.00	0.016	-35.92
-0.250	0.316	-10.01	13.00	0.046	-26.74	36.50	0.017	-35.39	60.00	0.019	-34.42	83.50	0.013	-37.72
0.000	0.476	-6.45	13.50	0.064	-23.88	37.00	0.027	-31.37	60.50	0.028	-31.06	84.00	0.009	-40.92
0.250	0.641	-3.86	14.00	0.066	-23.61	37.50	0.033	-29.63	61.00	0.036	-28.87	84.50	0.007	-43.10
0.500	0.788	-2.07	14.50	0.046	-26.74	38.00	0.029	-30.75	61.50	0.038	-28.40	85.00	0.004	-47.96
0.750	0.903	-0.89	15.00	0.039	-28.18	38.50	0.019	-34.42	62.00	0.036	-28.87	85.50	0.002	-53.98
1.000	0.977	-0.20	15.50	0.056	-25.04	39.00	0.018	-34.89	62.50	0.029	-30.75	86.00	0.001	-60.00
1.250	1.000	0.00	16.00	0.058	-24.73	39.50	0.028	-31.06	63.00	0.019	-34.42	86.50	0.001	-60.00
1.500	0.975	-0.22	16.50	0.041	-27.74	40.00	0.033	-29.63	63.50	0.012	-38.42	87.00	0.001	-60.00
1.750	0.905	-0.87	17.00	0.034	-29.37	40.50	0.029	-30.75	64.00	0.017	-35.39	87.50	0.002	-53.98
2.000	0.802	-1.92	17.50	0.049	-26.20	41.00	0.019	-34.42	64.50	0.026	-31.70	88.00	0.002	-53.98
2.250	0.681	-3.34	18.00	0.052	-25.68	41.50	0.017	-35.39	65.00	0.035	-29.12	88.50	0.002	-53.98
2.500	0.561	-5.02	18.50	0.038	-28.40	42.00	0.027	-31.37	65.50	0.040	-27.96	89.00	0.002	-53.98
2.750	0.464	-6.67	19.00	0.029	-30.75	42.50	0.033	-29.63	66.00	0.041	-27.74	89.50	0.001	-60.00
3.000	0.404	-7.87	19.50	0.043	-27.33	43.00	0.030	-30.46	66.50	0.038	-28.40	90.00	0.001	-60.00
3.250	0.380	-8.40	20.00	0.048	-26.38	43.50	0.020	-33.98	67.00	0.031	-30.17			
3.500	0.371	-8.61	20.50	0.036	-28.87	44.00	0.015	-36.48	67.50	0.022	-33.15			
3.750	0.358	-8.92	21.00	0.026	-31.70	44.50	0.023	-32.77	68.00	0.013	-37.72			
4.000	0.330	-9.63	21.50	0.038	-28.40	45.00	0.032	-29.90	68.50	0.011	-39.17			
4.250	0.285	-10.90	22.00	0.044	-27.13	45.50	0.032	-29.90	69.00	0.019	-34.42			
4.500	0.233	-12.65	22.50	0.034	-29.37	46.00	0.025	-32.04	69.50	0.029	-30.75			
4.750	0.187	-14.56	23.00	0.024	-32.40	46.50	0.015	-36.48	70.00	0.036	-28.87			
5.000	0.162	-15.81	23.50	0.033	-29.63	47.00	0.018	-34.89	70.50	0.042	-27.54			
5.250	0.167	-15.55	24.00	0.041	-27.74	47.50	0.028	-31.06	71.00	0.044	-27.13			
5.500	0.181	-14.85	24.50	0.035	-29.12	48.00	0.033	-29.63	71.50	0.044	-27.13			
5.750	0.190	-14.42	25.00	0.023	-32.77	48.50	0.031	-30.17	72.00	0.040	-27.96			
6.000	0.184	-14.70	25.50	0.029	-30.75	49.00	0.022	-33.15	72.50	0.035	-29.12			
6.250	0.163	-15.76	26.00	0.039	-28.18	49.50	0.014	-37.08	73.00	0.028	-31.06			
6.500	0.134	-17.46	26.50	0.036	-28.87	50.00	0.020	-33.98	73.50	0.019	-34.42			

Cohen, Dippell and Everist, P.C.

TABLE II  
COMPUTED COVERAGE DATA  
FOR THE PROPOSED DTV OPERATION OF  
KTUZ-DT, SHAWNEE, OKLAHOMA  
CHANNEL 29 1000 KW ERP 474 METERS HAAT  
JUNE 2008

Radial Bearing N ° E, T	Average*	Effective Height meters	Depression Angle	ERP At Radio Horizon kW	Distance to Contour F(50,90)	
	Elevation 3.2 to 16.1 km meters				48 dBu City Grade km	41 dBu Noise-Limited km
0	354.1	473.4	0.603	1000	97.0	112.5
45	320.0	507.5	0.624	1000	99.8	115.0
90	350.2	477.3	0.605	1000	97.3	112.8
135	357.7	469.8	0.600	1000	96.7	112.2
180	364.3	463.2	0.596	1000	96.2	111.7
225	360.1	467.4	0.599	1000	96.5	112.0
270	367.8	459.7	0.594	1000	95.9	111.4
315	341.4	486.1	0.611	1000	98.0	113.5
Average	352	475.6				

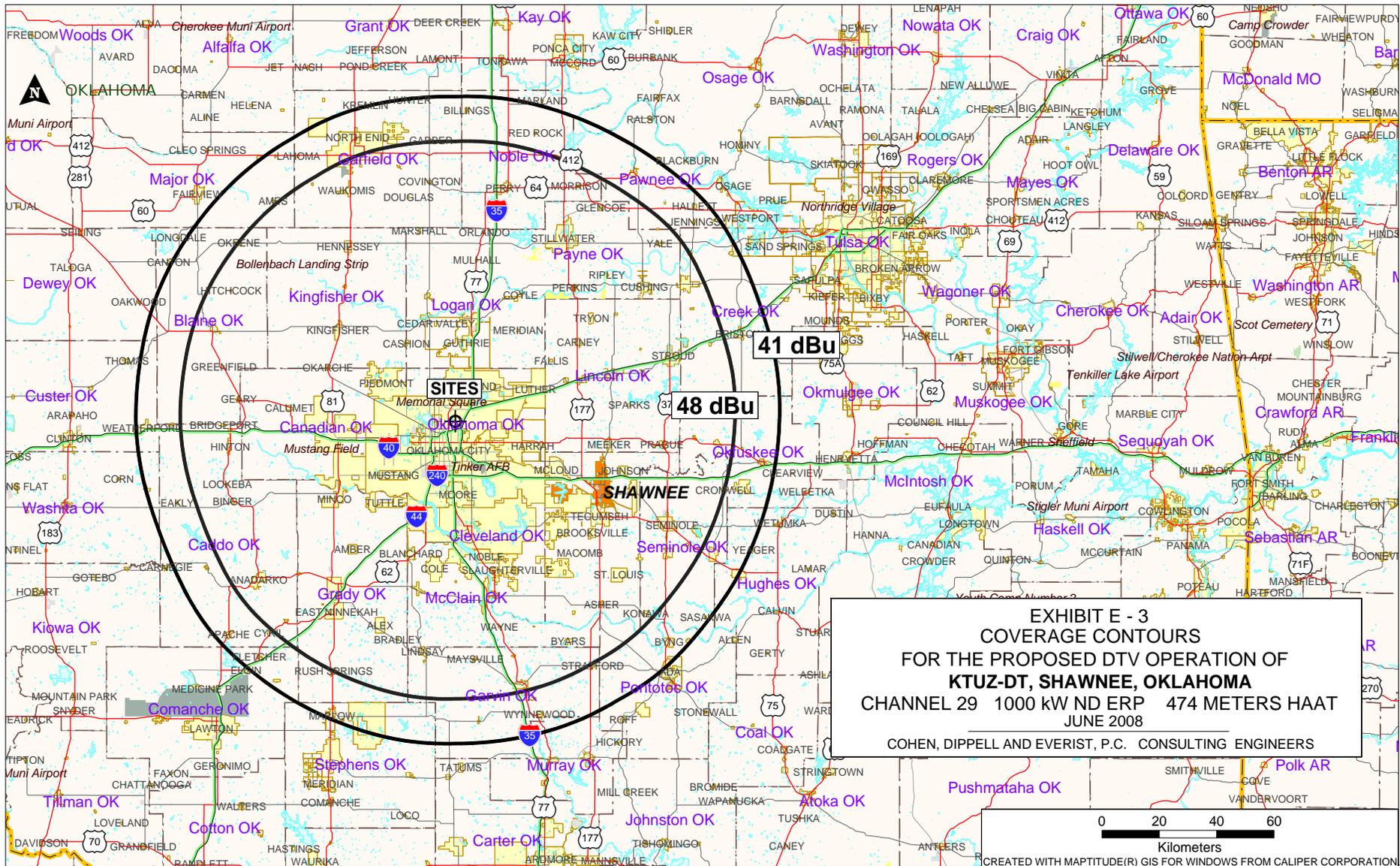
\*Based on data from FCC 3-second data base

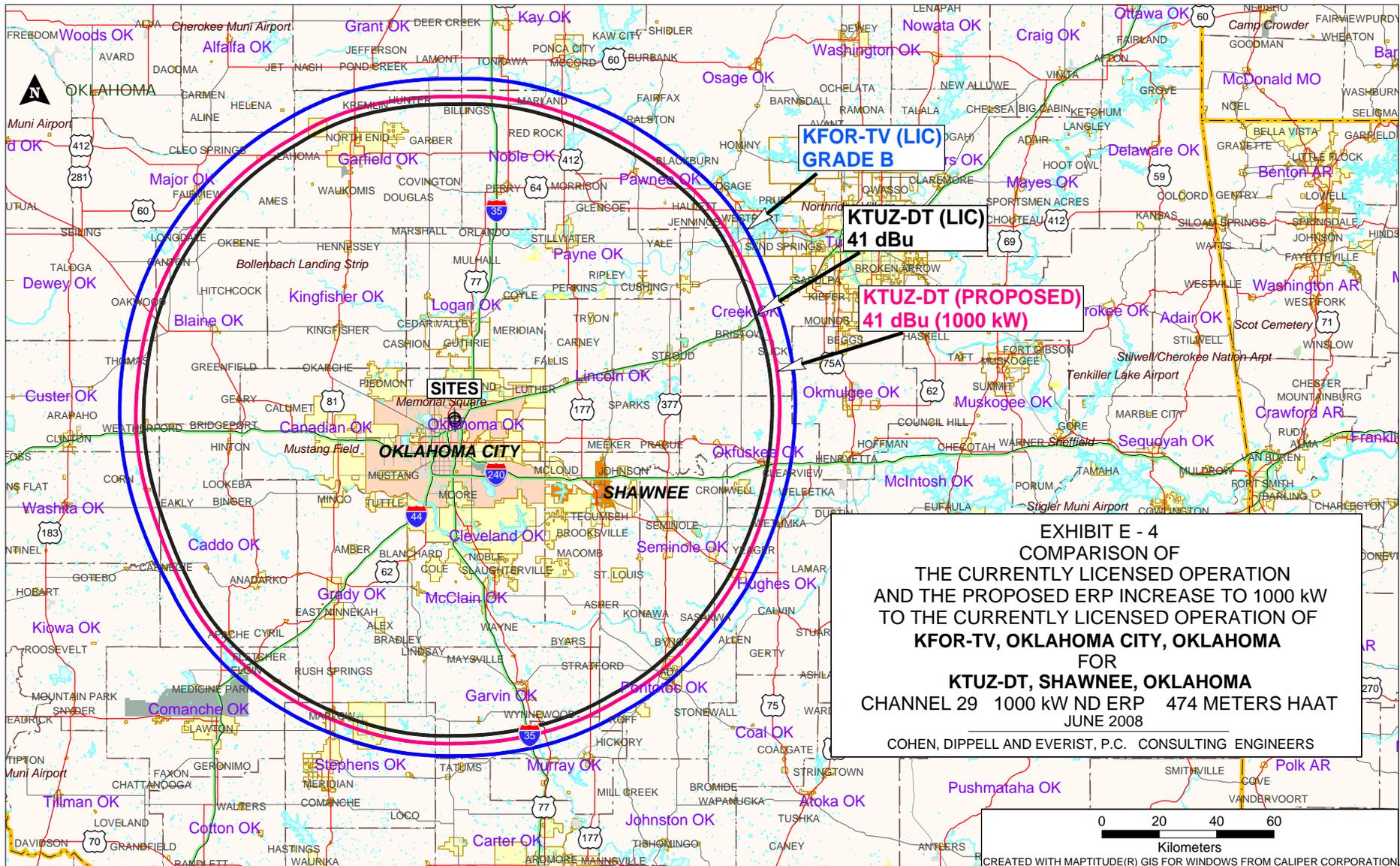
NOTE: Slight differences in average and effective height occurs and license value is retained

DTV Channel 29 (560-566 MHz)  
Average Elevation 3.2 to 16.1 km 352 meters AMSL  
Center of Radiation 827.5 meters AMSL  
Antenna Height Above Average Terrain 474 meters  
Effective Radiated Power 1000 kW (30 dBk)

North Latitude: 35° 33' 36"  
West Longitude: 97° 29' 07"

(NAD-27)





**SECTION III - D - DTV Engineering**

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

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

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

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

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

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

**SECTION III - D DTV Engineering**

**TECHNICAL SPECIFICATIONS** Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1. Channel Number: DTV \_\_\_\_\_ Analog TV, if any \_\_\_\_\_

2. Zone:  I  II  III

3. Antenna Location Coordinates: (NAD 27)

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

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

Not applicable  FAA Notification Filed with FAA

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

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

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

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

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

10. Antenna Specifications:

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

a.  Not Applicable

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

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

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

d. Polarization:  Horizontal  Circular  Elliptical

**TECH BOX**

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

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

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

Exhibit No.

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

Exhibit No.

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

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

Exhibit No.

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

Exhibit No.

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

By checking "Yes" to **Certification Checklist** Item 2, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radio frequency electromagnetic exposure in excess of FCC guidelines.

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

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

Yes  No  N/A

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

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 June 19, 2008	
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).