

APPLICATION FOR MINOR  
MODIFICATION TO A PERMITTED DTV  
BROADCAST STATION  
FCC FILE NO.: BPEDT-20000501AHB  
TO MAXIMIZE AND OPERATE IN THE POST  
DTV TRANSITION PERIOD  
WMAO-DT MISSISSIPPI AUTHORITY FOR  
EDUCATIONAL TELEVISION  
GREENWOOD, MISSISSIPPI

KESSLER & GEHMAN ASSOCIATES, INC.  
TELECOMMUNICATIONS CONSULTING ENGINEERS

20080613

*Prepared by Ryan Wilhour*

**KGGA**

507 N.W. 60th Street, Suite C  
Gainesville, Florida 32607

## KESSLER AND GEHMAN ASSOCIATES, INC.

ENGINEERING STATEMENT OF RYAN WILHOUR OF THE FIRM KESSLER AND  
GEHMAN ASSOCIATES, INC., CONSULTING ENGINEERS IN CONNECTION WITH  
AN APPLICATION FOR MINOR MODIFICATION OF A PERMITTED DTV  
BROADCAST STATION FCC FILE NUMBER BPEDT-20000501AHB TO MAXIMIZE  
OPERATION IN THE POST DTV TRANSITION PERIOD  
WMAO-DT  
MISSISSIPPI AUTHORITY FOR EDUCATIONAL TELEVISION  
GREENWOOD, MS

This firm has been employed by Mississippi Authority for Educational Television “MAET” to prepare engineering studies and a minor modification application to FCC file number BPEDT-20000501AHB for post DTV transition maximization.

MAET, licensee of WMAO-DT, Channel 25 herein proposes to increase its ERP from 625kW to 815kW for its post DTV transition operation. No other changes are proposed.

### ATTACHED FIGURES

In carrying out the engineering studies the following attached figures were prepared:

1. Engineering Specifications (Exhibit E1)
2. Elevation drawing of the antenna system (Exhibit E2)
3. Antenna Elevation Pattern (Exhibit E3)
4. USGS 7.5 minute topographic quadrangle showing the proposed transmitter location and the coordinate lines (Exhibit E4)
5. Map showing the predicted DTV coverage contour (Exhibit E5)
6. Allocation Analysis (Exhibit E6)
7. Environmental Impact/ RFR Hazard Analysis (Exhibit E7)

### ALLOCATION ANALYSIS

It is herein proposed to modify the above referenced channel 25 digital facility to maximize its coverage area without causing impermissible interference to other post DTV transition facilities. Exhibit E6 demonstrates the interference considerations for the proposed facility and further illustrates complete compliance to the 0.5% interference threshold criteria.

ENVIRONMENTAL IMPACT/RFR HAZARD ANALYSIS

An analysis has been made of the human exposure to RFR using the calculation methodology described in OET Bulletin 65, Edition, 97-01. Exhibit E7 is a RFR study demonstrating compliance within 5% of the most restrictive permissible exposure at any location 2 meters above the ground. Exhibit E7 calculations were made using a frequency of 536 MHz, which is the lower edge of the proposed channel. To account for ground reflections, a coefficient of 1.6 was included in the calculations.

Pursuant to OET Bulletin 65 concerning multiple-user transmitter sites only those licensees whose transmitters produce power density levels greater than 5.0% of the exposure limit are considered significant contributors to RFR. Since the proposed operation is well within 5% of the most permissible exposure at any location 2 meters above the ground, it is not considered a significant contributor to RFR exposure. Thus, contributions to exposure from other RF sources in the vicinity of WMAO-DT were not taken into account. The instant proposal complies with the FCC limits for human exposure to RF radiation and thus is excluded from further environmental processing.

DECLARATION OF ENGINEER

The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge. Executed on June 13, 2008.

The logo for Kessler and Gehman Associates, Inc. (KGA) features the letters 'KGA' in a stylized, serif font. The letters are white and are superimposed on a thick, horizontal grey bar that extends across the width of the logo.

Ryan Wilhour

A handwritten signature in blue ink that reads 'Ryan Wilhour'. The signature is written in a cursive, flowing style.

Consulting Engineer

**WMAO-DT**  
**GREENWOOD, MS**

**ENGINEERING SPECIFICATIONS**

**A. *Transmitter Site***

Geographic coordinates determined by licensed surveyor (NAD27):

**North Latitude:** ..... **33° 22' 34"**  
**West Longitude:** ..... **90° 32' 32"**

Street Address

**5.2 km NE of Inverness, Mississippi.**

**B. *Main Studio Site***

Street Address

**3825 Ridgewood Road, Jackson,  
(Hinds County) Mississippi 39211-6463.**

**C. *Proposed Facility***

DTV Channel

**Number:** ..... **25**  
**Frequency:** ..... **536-542 MHz**

**D. *Antenna Height***

Height of Site Above Mean Sea Level (AMSL): ..... **35.0 M**

Overall Height of Structure Above Ground: ..... **322.8 M**  
(including all appurtenances)

Overall Height of Structure Above Mean Sea Level: ..... **357.8 M**  
(including all appurtenances)

Height of Site Above Average Terrain: ..... **1.3 M**

Antenna Height Radiation Center (R/C) Above Ground: ..... **316.0 M**

Antenna Height R/C Above Average Terrain: ..... **317.3 M**

Antenna Height R/C Above Mean Sea Level: ..... **351.0 M**

Average of All Non-Odd Radials: ..... **33.7 M**

**E. *System Parameters – Horizontal Polarization:***

Maximum Antenna Gain in Beam Maximum: ..... **14.36 dB**

Maximum Antenna Gain in Horizontal Plane: ..... **11.46 dB**

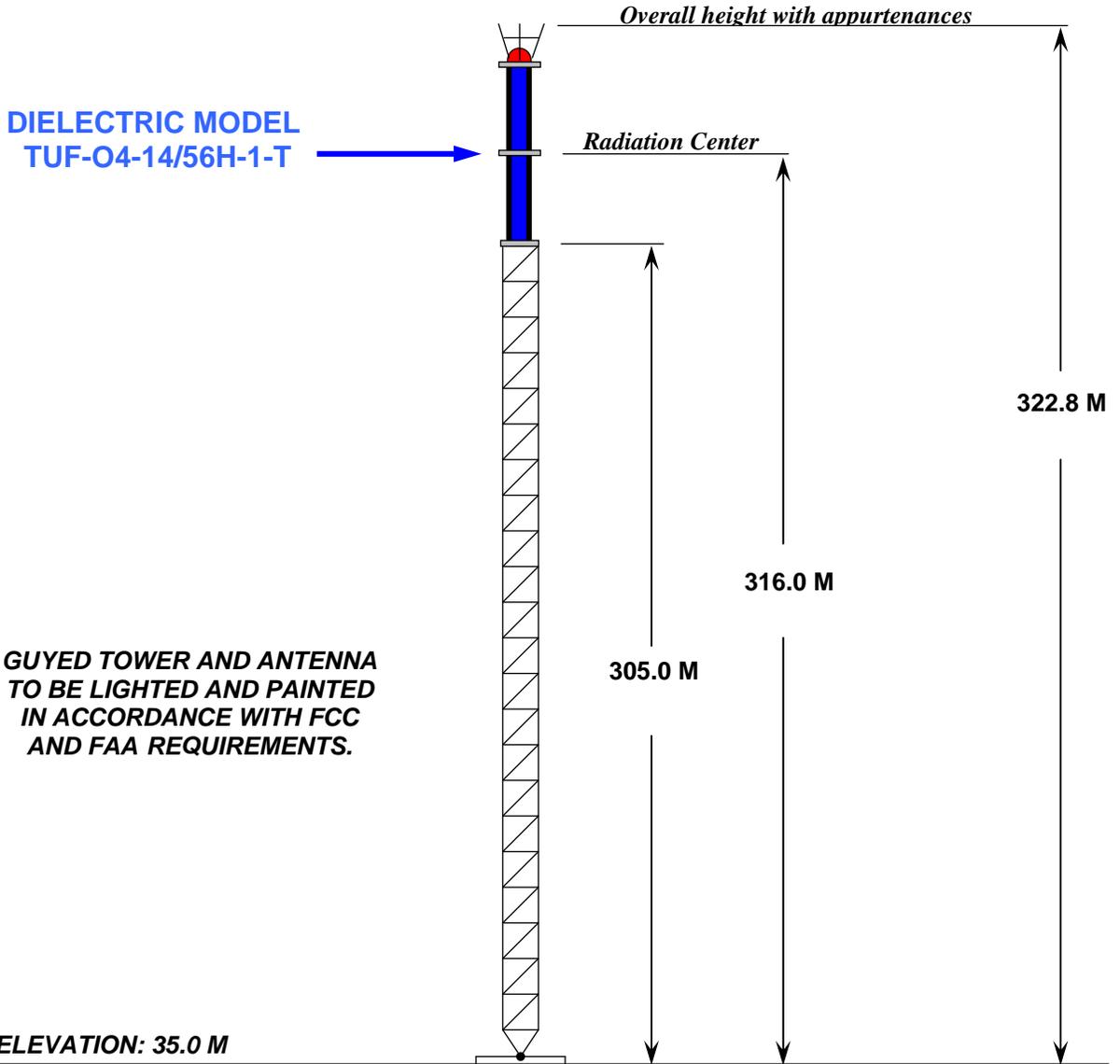
Maximum Effective Radiated Power: ..... **29.11 dBk**

    In Beam Maximum: ..... **815.0 KW**

Maximum Effective Radiated Power: ..... **26.21 dBk**

    In Horizontal Plane: ..... **418.0 kW**

## ANTENNA STRUCTURE ELEVATION VIEW



<b>OVERALL HEIGHT AGL:</b>	<b>322.8 M</b>
<b>OVERALL HEIGHT AMSL:</b>	<b>357.8 M</b>
<b>RADIATION CENTER AGL:</b>	<b>316.0 M</b>
<b>RADIATION CENTER AMSL:</b>	<b>351.0 M</b>
<b>AVERAGE OF NON-ODD RADIALS:</b>	<b>33.7 M</b>
<b>RADIATION CENTER HAAT:</b>	<b>317.3 M</b>
<b>SITE HAAT:</b>	<b>1.3 M</b>

**COORDINATES: (NAD 27)**  
**N. LATITUDE 33° 22' 34"**  
**W. LONGITUDE 90° 32' 32"**

**Antenna Structure Registration Number:**  
**1041035**

**NOTE: NOT TO SCALE**

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EXHIBIT E2

DIELECTRIC TUF-O4-14/56H-1-T  
TABULATED ELEVATION DATA

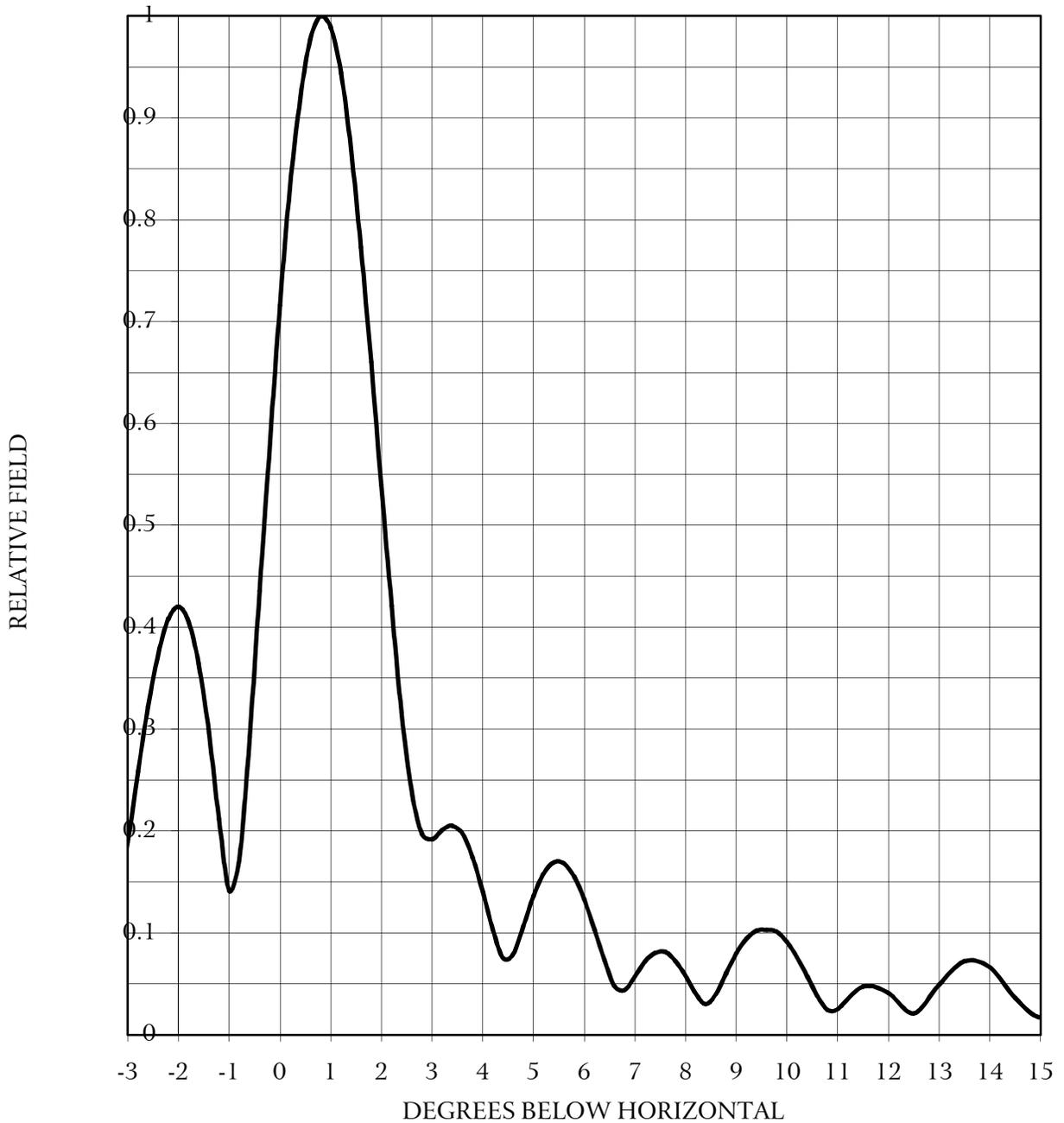
Angle	Field										
-10.0	0.091	2.4	0.316	10.6	0.038	30.5	0.074	51.0	0.023	71.5	0.031
-9.5	0.064	2.6	0.237	10.8	0.024	31.0	0.049	51.5	0.028	72.0	0.043
-9.0	0.025	2.8	0.197	11.0	0.025	31.5	0.028	52.0	0.028	72.5	0.056
-8.5	0.048	3.0	0.192	11.5	0.047	32.0	0.016	52.5	0.023	73.0	0.068
-8.0	0.053	3.2	0.201	12.0	0.041	32.5	0.016	53.0	0.015	73.5	0.078
-7.5	0.029	3.4	0.205	12.5	0.021	33.0	0.016	53.5	0.008	74.0	0.087
-7.0	0.069	3.6	0.197	13.0	0.049	33.5	0.012	54.0	0.009	74.5	0.093
-6.5	0.126	3.8	0.174	13.5	0.072	34.0	0.007	54.5	0.013	75.0	0.097
-6.0	0.137	4.0	0.140	14.0	0.066	34.5	0.012	55.0	0.015	75.5	0.100
-5.5	0.089	4.2	0.103	14.5	0.036	35.0	0.019	55.5	0.013	76.0	0.101
-5.0	0.032	4.4	0.075	15.0	0.017	35.5	0.021	56.0	0.009	76.5	0.101
-4.5	0.086	4.6	0.079	15.5	0.034	36.0	0.017	56.5	0.009	77.0	0.099
-4.0	0.092	4.8	0.106	16.0	0.031	36.5	0.009	57.0	0.016	77.5	0.096
-3.5	0.055	5.0	0.136	16.5	0.013	37.0	0.008	57.5	0.024	78.0	0.092
-3.0	0.189	5.2	0.158	17.0	0.035	37.5	0.014	58.0	0.031	78.5	0.088
-2.8	0.258	5.4	0.169	17.5	0.057	38.0	0.014	58.5	0.034	79.0	0.083
-2.6	0.322	5.6	0.188	18.0	0.057	38.5	0.010	59.0	0.032	79.5	0.078
-2.4	0.374	5.8	0.155	18.5	0.037	39.0	0.007	59.5	0.027	80.0	0.073
-2.2	0.408	6.0	0.133	19.0	0.014	39.5	0.015	60.0	0.019	80.5	0.068
-2.0	0.420	6.2	0.103	19.5	0.024	40.0	0.023	60.5	0.011	81.0	0.063
-1.8	0.405	6.4	0.073	20.0	0.027	40.5	0.024	61.0	0.007	81.5	0.058
-1.6	0.364	6.6	0.048	20.5	0.015	41.0	0.020	61.5	0.013	82.0	0.053
-1.4	0.296	6.8	0.044	21.0	0.026	41.5	0.012	62.0	0.018	82.5	0.049
-1.2	0.212	7.0	0.057	21.5	0.048	42.0	0.006	62.5	0.020	83.0	0.045
-1.0	0.141	7.2	0.072	22.0	0.055	42.5	0.011	63.0	0.019	83.5	0.041
-0.8	0.172	7.4	0.080	22.5	0.042	43.0	0.014	63.5	0.014	84.0	0.038
-0.6	0.292	7.6	0.081	23.0	0.016	43.5	0.012	64.0	0.010	84.5	0.035
-0.4	0.436	7.8	0.072	23.5	0.017	44.0	0.007	64.5	0.016	85.0	0.032
-0.2	0.582	8.0	0.058	24.0	0.028	44.5	0.011	65.0	0.028	85.5	0.030
0.0	0.716	8.2	0.040	24.5	0.021	45.0	0.019	65.5	0.040	86.0	0.028
0.2	0.831	8.4	0.030	25.0	0.017	45.5	0.025	66.0	0.051	86.5	0.026
0.4	0.919	8.6	0.040	25.5	0.047	46.0	0.025	66.5	0.060	87.0	0.024
0.6	0.977	8.8	0.060	26.0	0.072	46.5	0.020	67.0	0.066	87.5	0.023
0.8	1.000	9.0	0.080	26.5	0.079	47.0	0.012	67.5	0.068	88.0	0.021
1.0	0.989	9.2	0.094	27.0	0.062	47.5	0.006	68.0	0.066	88.5	0.020
1.2	0.944	9.4	0.102	27.5	0.030	48.0	0.011	68.5	0.060	89.0	0.019
1.4	0.870	9.6	0.103	28.0	0.032	48.5	0.014	69.0	0.052	89.5	0.019
1.6	0.773	9.8	0.101	28.5	0.069	49.0	0.013	69.5	0.041	90.0	0.018
1.8	0.660	10.0	0.091	29.0	0.094	49.5	0.008	70.0	0.030		
2.0	0.540	10.2	0.076	29.5	0.102	50.0	0.007	70.5	0.020		
2.2	0.421	10.4	0.057	30.0	0.093	50.5	0.015	71.0	0.021		

# ELEVATION PATTERN

DIELECTRIC TUF-O4-14/56H-1-T

RMS Gain at Main Lobe 27.30 (14.36 dB)  
RMS Gain at Horizontal 14.00 (11.46 dB)

Beam Tilt 0.75 deg  
Frequency 539.0 MHz



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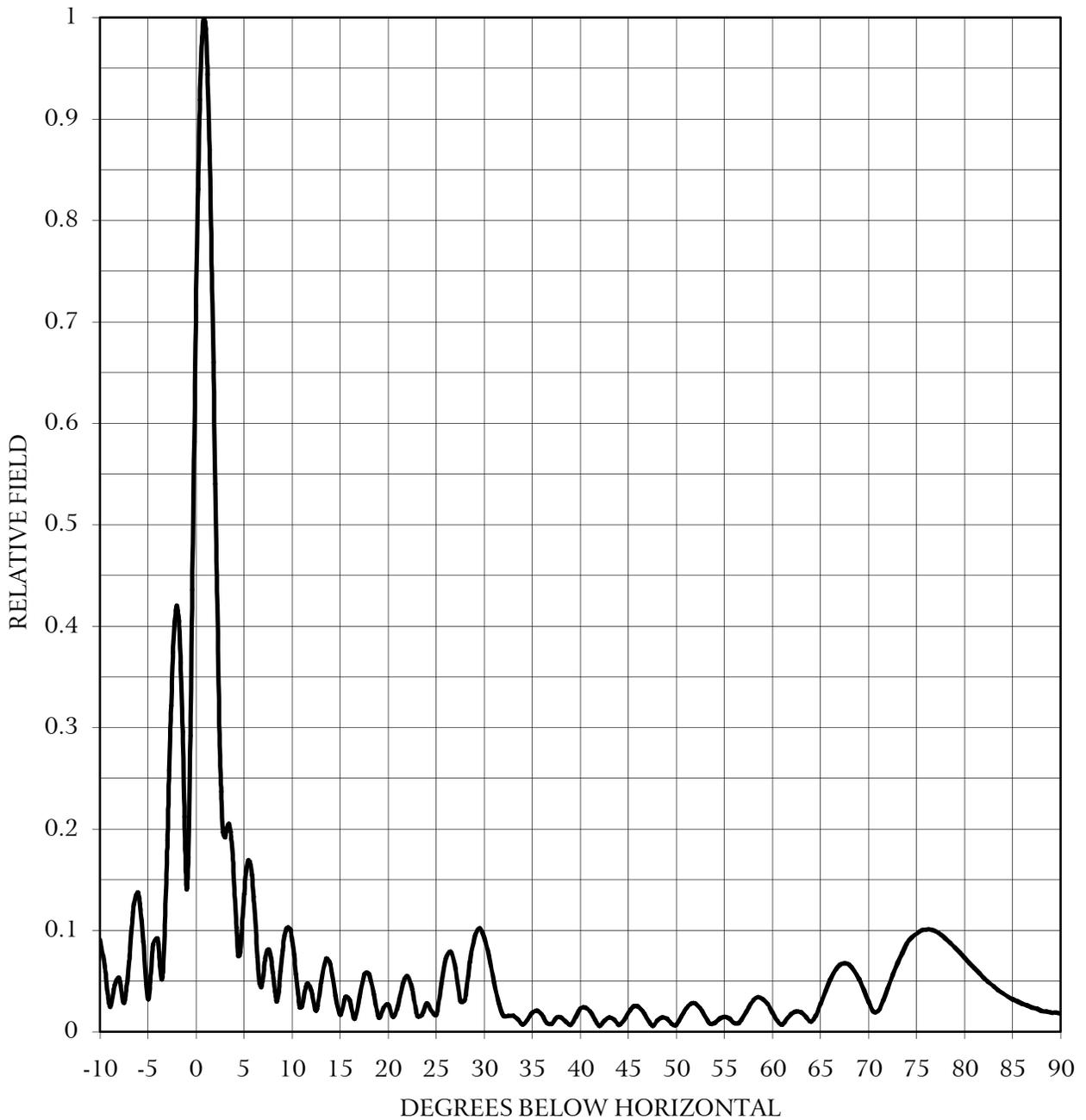
EXHIBIT 3B

# ELEVATION PATTERN

DIELECTRIC TUF-04-14/56H-1-T

RMS Gain at Main Lobe 27.30 (14.36 dB)  
RMS Gain at Horizontal 14.00 (11.46 dB)

Beam Tilt 0.75 deg  
Frequency 539.0 MHz

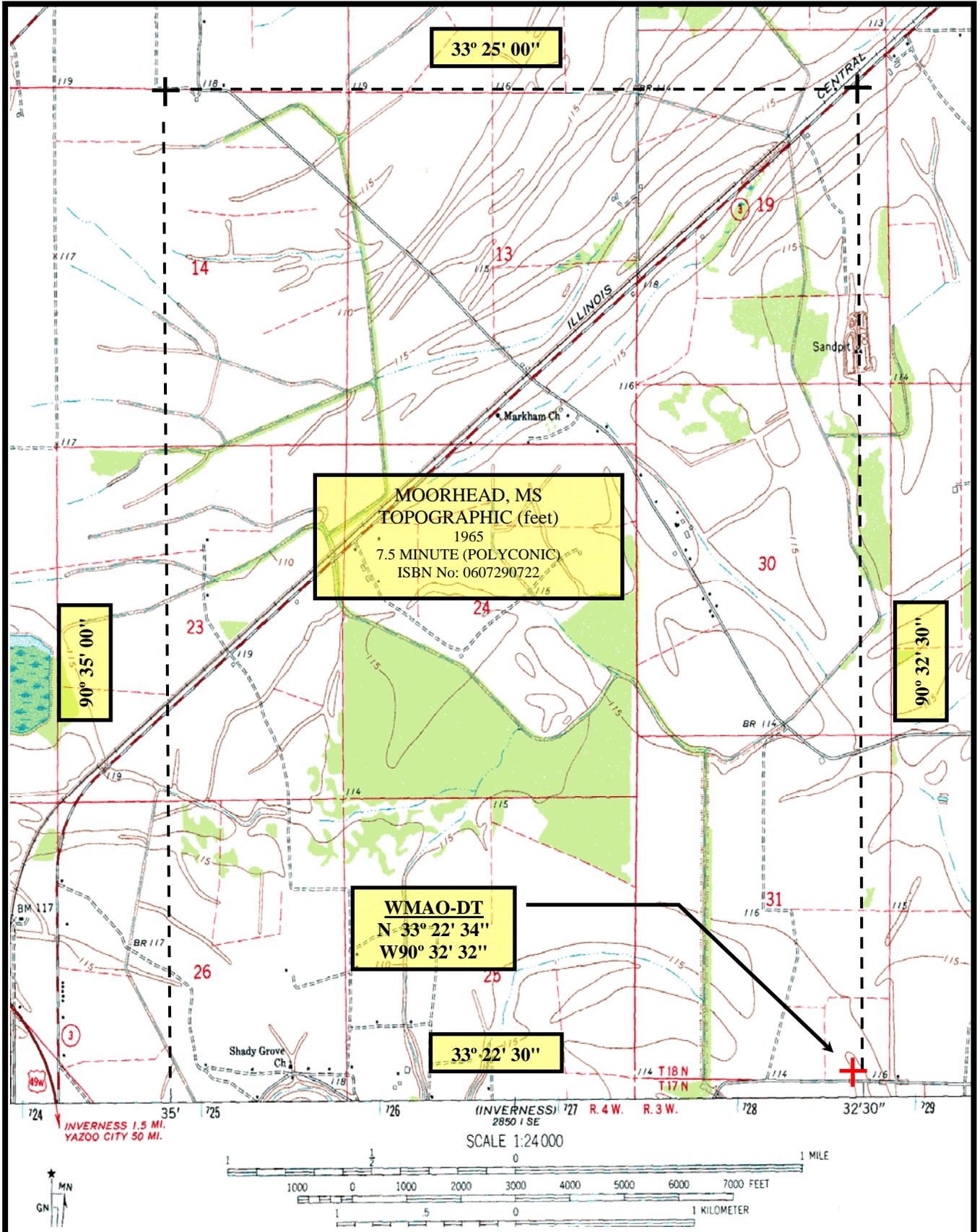


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EXHIBIT 3C



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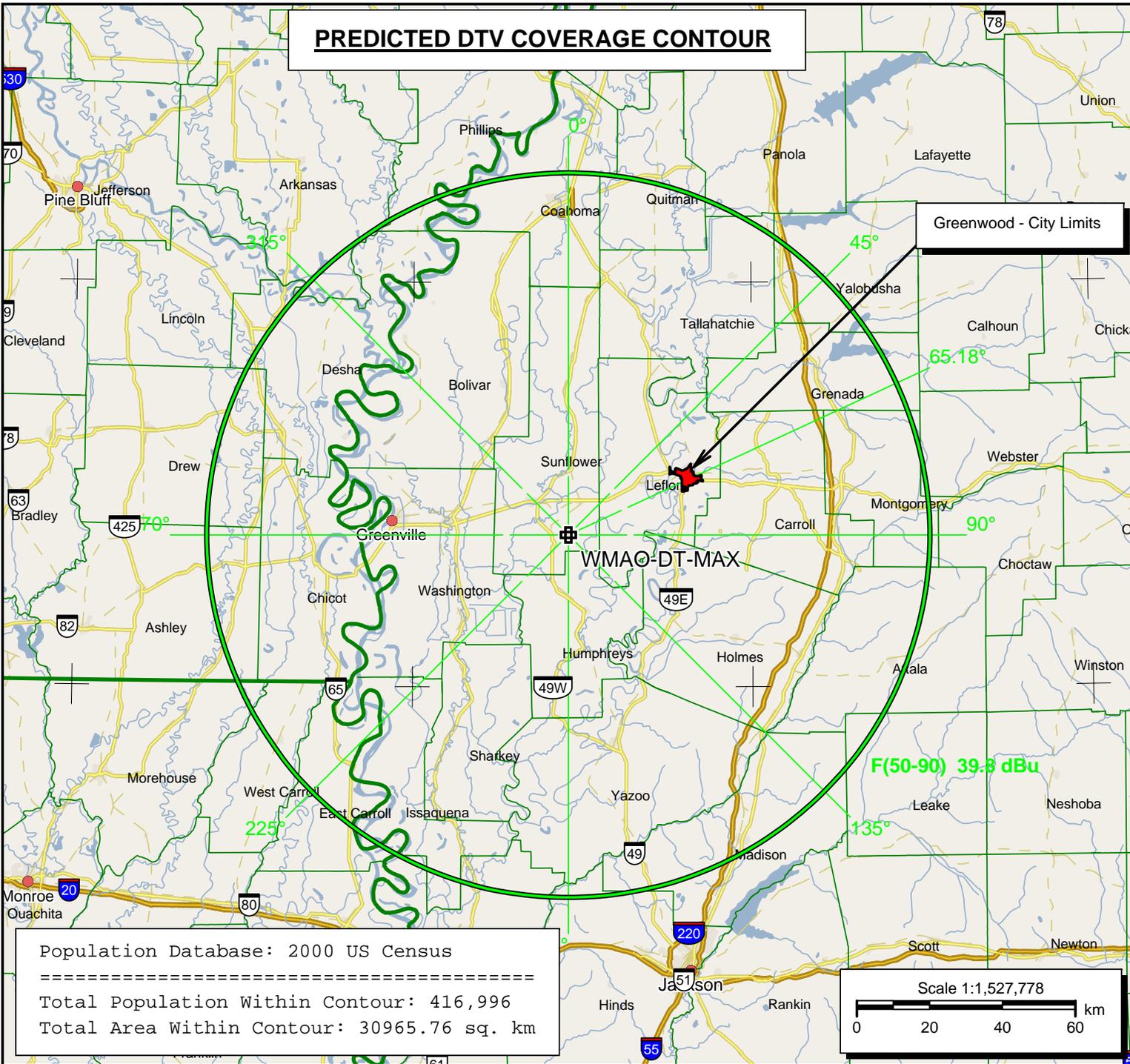
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**EXHIBIT E4**

# PREDICTED DTV COVERAGE CONTOUR

**WMAO-DT-MAX**  
 Maximized  
 Latitude: 33-22-34 N  
 Longitude: 090-32-32 W  
 ERP: 815.00 kW  
 Channel: 25  
 Frequency: 539.0 MHz  
 AMSL Height: 351.0 m  
 Elevation: 35.0 m  
 Horiz. Pattern: Omni  
 Vert. Pattern: Yes  
 Elec Tilt: 0.0  
 Prop Model: None



Greenwood - City Limits

F(50-90) 39.8 dBu

Population Database: 2000 US Census  
 =====  
 Total Population Within Contour: 416,996  
 Total Area Within Contour: 30965.76 sq. km

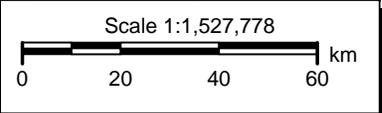
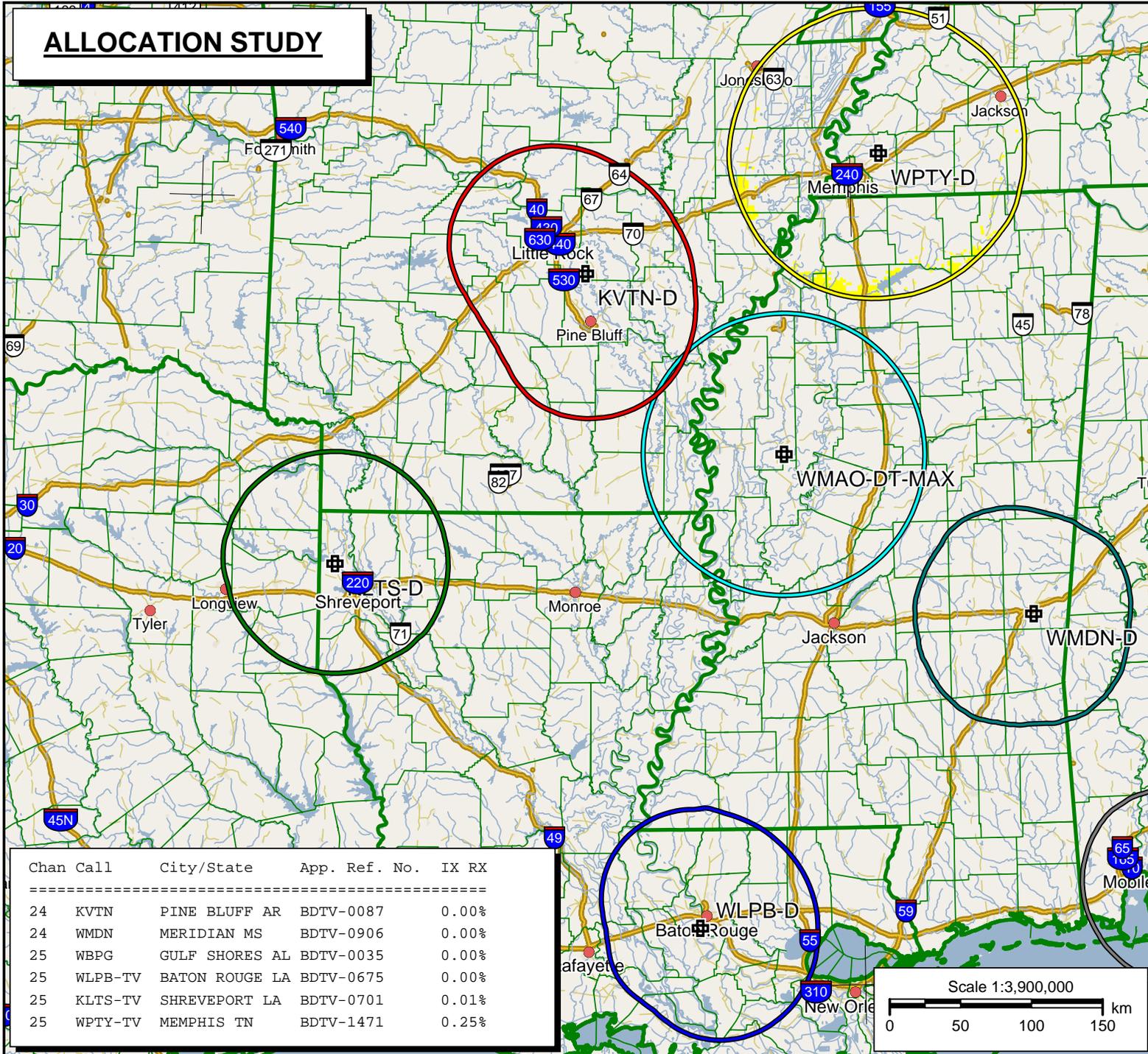


EXHIBIT E5

# ALLOCATION STUDY



**WMAO-DT-MAX**  
 Maximized  
 Latitude: 33-22-34 N  
 Longitude: 090-32-32 W  
 ERP: 815.00 kW  
 Channel: 25  
 Frequency: 539.0 MHz  
 AMSL Height: 351.0 m  
 Elevation: 35.0 m  
 Horiz. Pattern: Omni  
 Vert. Pattern: Yes  
 Elec Tilt: 0.0  
 Prop Model: Longley/Rice  
 Climate: Cont temperate  
 Conductivity: 0.0050  
 Dielec Const: 15.0  
 Refractivity: 301.0  
 Receiver Ht AG: 10.0 m  
 Receiver Gain: 0 dB  
 Time Variability: 10.0%  
 Sit. Variability: 50.0%  
 ITM Mode: Broadcast

Chan	Call	City/State	App. Ref. No.	IX	RX
24	KVTN	PINE BLUFF AR	BDTV-0087	0.00%	
24	WMDN	MERIDIAN MS	BDTV-0906	0.00%	
25	WBPB	GULF SHORES AL	BDTV-0035	0.00%	
25	WLPB-TV	BATON ROUGE LA	BDTV-0675	0.00%	
25	KLTS-TV	SHREVEPORT LA	BDTV-0701	0.01%	
25	WPTY-TV	MEMPHIS TN	BDTV-1471	0.25%	

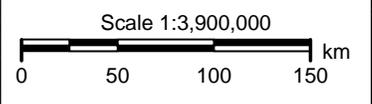
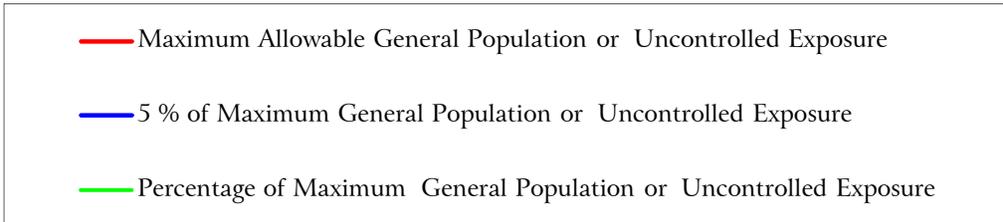
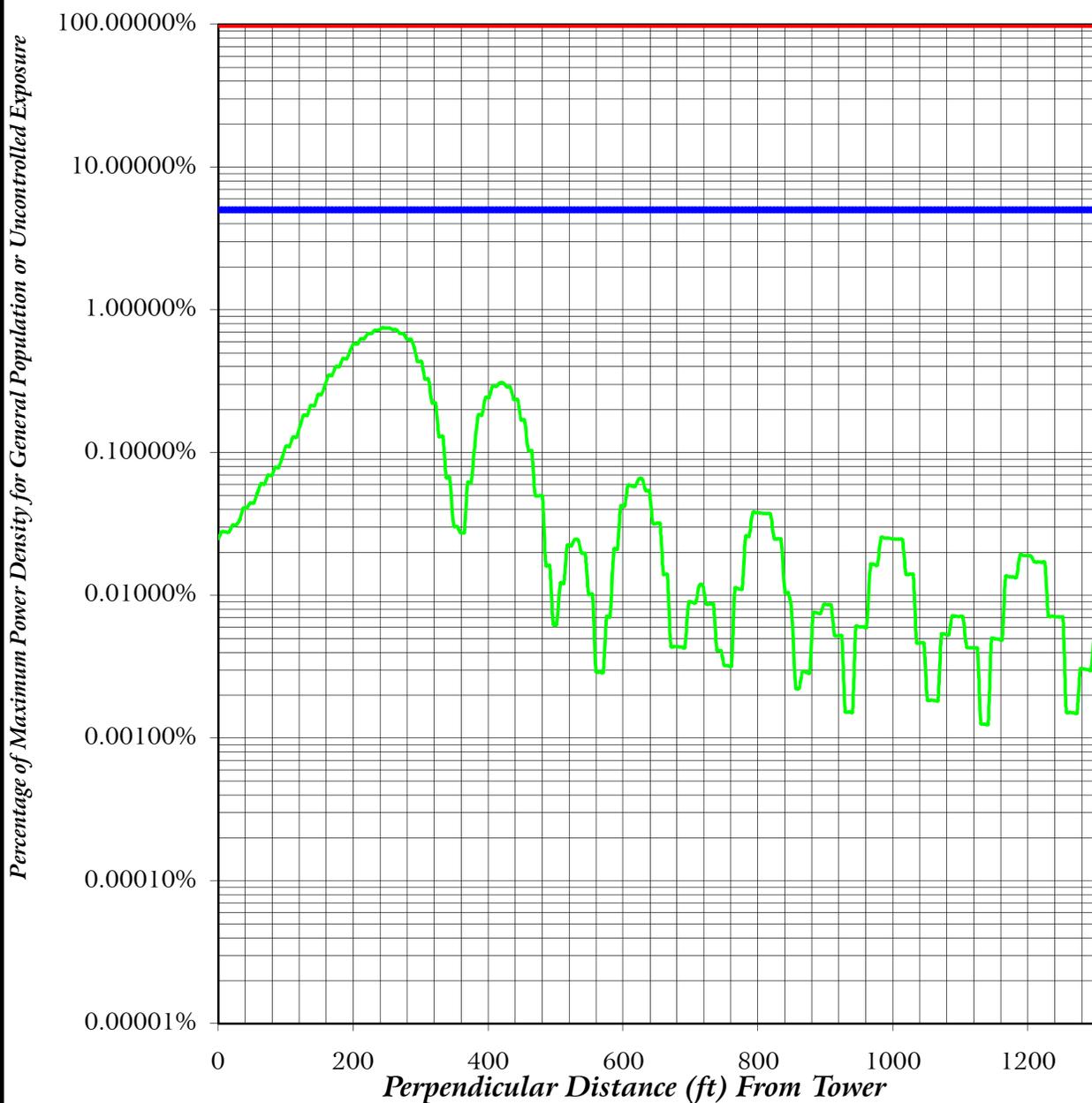


Exhibit E6

# FAR FIELD EXPOSURE TO RF EMISSIONS



METHODOLOGY AND EXPLANATION OF  
ENVIRONMENTAL IMPACT / RADIO FREQUENCY RADIATION  
HAZARD ANALYSIS

A theoretical analysis has been conducted of the human exposure to radio frequency radiation (“RFR”) using the calculation methodology described in *OET Bulletin 65, Edition 97-01*. The RFR analysis is conducted pursuant to the following methodology:

Terrain<sup>1</sup> extraction is compiled from the proposed tower site to radial lengths of 0.25 miles in 0.001 mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360 degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

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<sup>1</sup> Terrain extraction is based upon a 3 arc second point spacing terrain database.