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KENSINGTON, MARYLAND

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ENGINEERING EXHIBIT  
APPLICATION FOR  
MODIFICATION OF CONSTRUCTION PERMIT  
CHANNEL 12 OF BEAUMONT, INC.  
STATION KBMT-DT  
BEAUMONT, TEXAS

ENGINEERING STATEMENT

The instant Engineering Exhibit, of which this statement is part, has been prepared on behalf of Channel 12 of Beaumont, Inc. (hereafter, Channel 12), the permittee in BPCDT-19991012ABM for the construction of a new facility for station KBMT-DT, Beaumont, Texas. The authorization is for operation on Channel 50 with maximum average effective radiated power of 1000 kW and antenna radiation center height above average terrain of 292 meters.

Channel 12 elected channel 12 as its DTV channel on FCC Form 382 which was electronically filed on January 24, 2005, and confirmed as Channel 12's tentative digital channel in the Commission's Public Notice dated, October 4, 2005 (Tentative Digital Channel Designations for Stations Participating in the First Round of DTV Channel Elections and Second Round Election Filing Deadline, Attachment 1, page 2). Since Channel 12 intends to utilize channel 12 as its permanent DTV channel, the primary purpose of the instant Channel 50 modification of construction permit application is to achieve compliance with the Commission's "Use-it-or lose-it" policy applicable to licensees that intend to operate with facilities that are different from those authorized in their respective outstanding construction permits, i.e., serve at least 80 percent of the viewers served by the 1997 facility on which replication was based.

Channel 12, now, seeks to modify the construction permit in a manner that is permitted under the freeze announced on August 3, 2004, (DA 04-2446) relating to the acceptance of certain types of applications and petitions for rulemaking. The instant

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application proposes to modify the construction permit for KBMT-DT to specify facilities that will produce signals that are less than authorized, and is, therefore, acceptable for filing. In essence, it is a check-list type application, and no discussion of allocation interference matters are addressed herein.

Specifically, Channel 12 seeks to operate KBMT-DT on Channel 50 from the same tower that is employed by analog station KBMT, Channel 12. The KBMT tower is approximately 240 meters from the tower location specified in the outstanding KBMT-DT construction permit. The maximum average effective radiated power that is now proposed is 35.5 kW, and the antenna radiation center height above average terrain is reduced to 276 meters. With reduced facilities, and at a site that is only 240 meters from the site in the outstanding construction permit, no question arises that the noise-limited, 41 dBu, F(50,90), contour for the operation that is now proposed extends beyond that authorized in BPCDT-19991012ABM. Hence, this application is acceptable under the current freeze.

As stated earlier, the tower that will support the antenna is the same as that employed for Station KBMT. The tower NAD '27 site coordinates are: 30° 11' 26" north latitude; 93° 53' 08" west longitude. The site elevation is 8 meters above mean sea level. The overall structure height is 315 meters above ground level (AGL). The KBMT-DT antenna will be side-mounted on the supporting tower with the radiation center at an elevation of 274 meters AGL. The tower ASRN is 047437.

A 305 meter length of Dielectric 4 1/16" (10.3 cm.) air dielectric coaxial cable with an attenuation of 1.77 dB at 690 MHz (Ch. 50) will transfer energy from the transmitter to the antenna. This transmission line will be used, also, to transfer energy

from the KBMT, Channel 12, NTSC transmitter to its associated antenna that is located on top of the tower. A combiner with an insertion loss of 0.15 dB will diplex the analog and digital signals at the input to the transmission line, and, a tower mounted splitter with an insertion loss of 0.15 dB will separate the signals at the output of the transmission line for feeding the respective Channel 12 and Channel 50 antennas. The overall loss at Channel 50 for the transmission line/combiner/splitter complex is 2.07 dB.

The proposed Channel 50 antenna is a Dielectric, Model TLP-24H (C). Figure 1 is the azimuth relative field radiation pattern for the antenna. Figure 2 provides relative field data for the pattern of Figure 1. An electrical beam tilt of  $1.0^\circ$  will be employed. The elevation relative field patterns for the antenna are furnished in Figure 3, Sheets 1 and 2. Figure 4 is a tabulation of the relative field data for the patterns of Figure 3. Maximum power gain of 39.1 (15.92 dB) will occur at a bearing of  $180^\circ$  true at the  $1^\circ$  electrical beam tilt depression angle below the horizontal plane.

The transmitter power output will be 1.45 kW (1.61 dBk). After taking into account the transmission line system losses, and the antenna maximum power gain, the maximum effective radiated power will be 15.46 dBk, which translates to 35.5 kW after taking into account the FCC's administrative rounding procedure.

The accompanying map, Figure 5, shows the 41 dBu, F(50,90) DTV noise-limited contour; the Channel 50, dipole adjusted, noise-limited contour used for population replication determination purposes; and the 48 dBu, F(50,90) principal community coverage contour for the proposed KBMT-DT operation. The map demonstrates that all of Beaumont will be encompassed by the principal community coverage contour. Figure 6 provides the underlying supporting data for the contours in Figure 5.



Upon timely implementation of the instant proposal, the 80 % population served test for retaining carry over protection for the ultimate operation of KBMT-DT on Channel 12, will be achieved. Using the Techware implementation of the FCC's "tv\_process" program, with no changes in the defaults, it was determined that the 2000 Census population within the proposed interference-free, 41 dBu, dipole adjusted, noise – limited, contour is 579,844 persons.

The FCC's December 21, 2004, Table I list of "Station Assignment and Service Information" indicates a population of 652,962 persons for the licensed KBMT, Ch. 12, 316 kW/305 m operation. The now proposed Channel 50 operation, when implemented, will provide service to 88.5% of the Channel 12 reference population. If timely effectuated, the operation would satisfy the minimum 80 % population served test for carry over interference protection with respect to the Ch 12 reference in Table I.

The proposed operation will have no significant impact on the environment. The tower that will support the antenna is in existence, and is used to support the transmitting antenna for analog Channel 12 Station KBMT. Hence, only the concern regarding exposure of humans to radio-frequency radiation (rfr) from among the list of environmental concerns in the FCC's Rules, merits attention. Exposure levels at uncontrolled (public) and controlled (worker) locations have been considered.

A study has been conducted to ascertain the impact that the proposed operation could have relative to the maximum permissible exposure (MPE) for uncontrolled locations as set forth in the FCC's adopted standard. Toward this end, a test calculation based on the Office of the Chief Engineer's Bulletin 65 recommended approach, has been made.



The vertical plane radiation characteristic for the proposed KBMT-DT antenna is given in Figure 3, and shows that the relative field for any steep depression angle below the horizontal plane does not exceed 17 % of the maximum at the 1.0° electrical beam tilt angle. The test calculation that has been performed took into account the 17% of maximum vertical plane factor to determine the equivalent plane wave power density that could be expected from the proposed operation at a target that is located 2 meters above ground level (AGL) at the tower base. The calculation result represents the highest power density level that could be expected anywhere on the ground.

The calculation to the target yielded an equivalent plane wave power density level of 0.00048 milliwatt per square centimeter ( $\text{mW}/\text{cm}^2$ ). The MPE at Channel 50 (690 MHz) is  $0.46 \text{ mW}/\text{cm}^2$ . The proposed operation would contribute a maximum of 0.1 % to the MPE at any publicly accessible location. This prospective contribution to the MPE is too small to raise any concern with respect to possible rfr overexposure to the general public.

As to worker rfr overexposure concerns, the following is germane. The KBMT tower, that will be employed to support the KBMT-DT antenna, is enclosed within a fence, and access within the fence is available only to authorized personnel. The fenced-in area may be considered a controlled area for analysis purposes. The procedures that are already in place for the termination of excitation to an antenna for the avoidance of overexposure of workers to rfr when work must be performed on the tower, will be modified to take into account the proposed KBMT-DT antenna. Radiation hazard warning signs are already installed. Based on the modified procedures that are to be implemented, workers who must perform their duties at locations on the tower that could ordinarily be expected to result in excessive rfr exposure levels, will not be overexposed.

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Engineering Statement (continued)

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The foregoing discussion demonstrates that both the public and workers will not suffer overexposure to rfr from the proposed operation according to the criteria adopted by the FCC. An environmental assessment is not required for the instant proposal.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 17, 2005.

*Bernard R. Segal, P.E.*  
Bernard R. Segal, P. E.



Call Letters  
Location  
Customer  
Antenna Type

**KBMT-DT** Channel **50**  
**BEAUMONT, TX**  
**TLP-24H (C)**

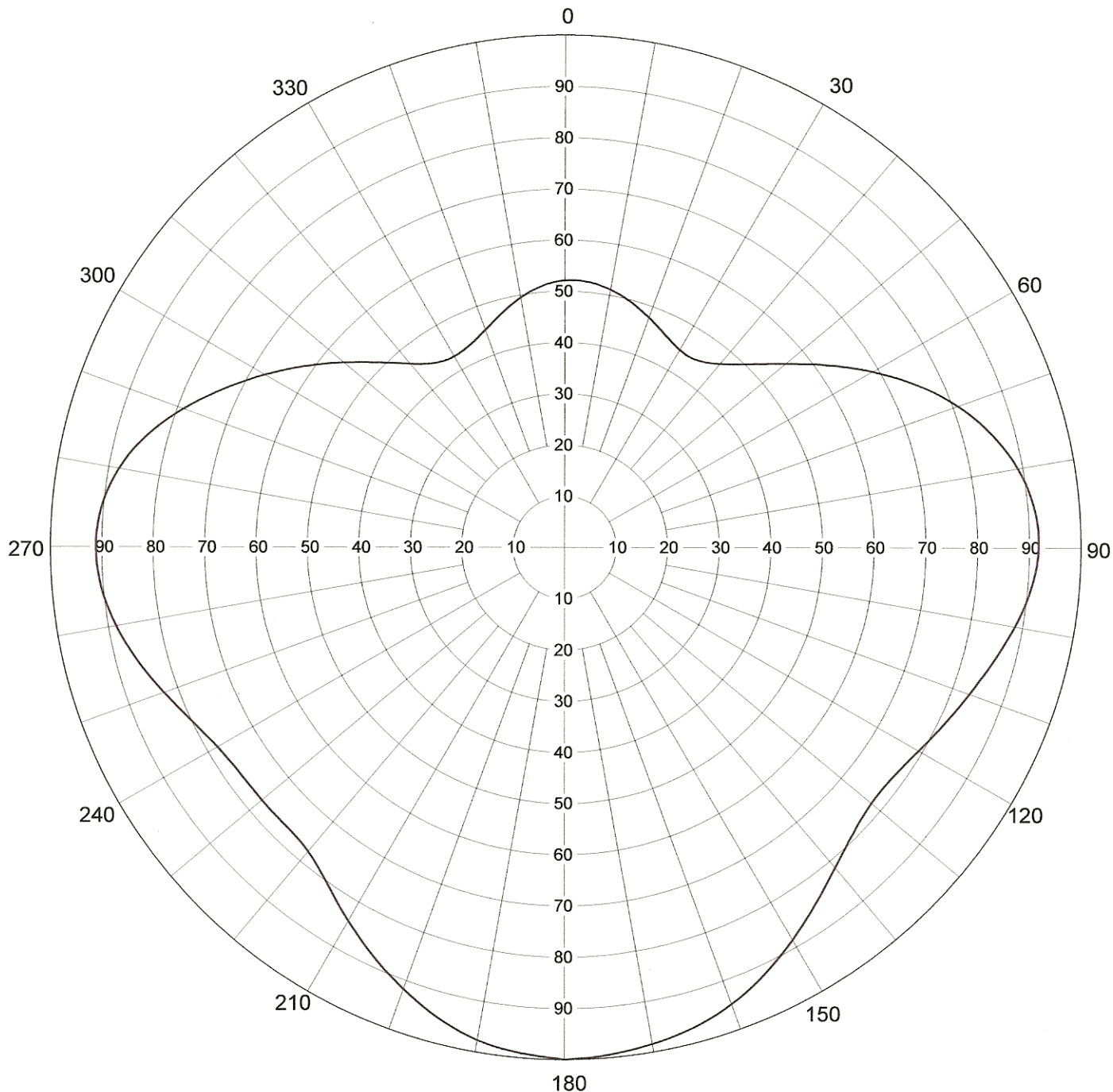
## AZIMUTH PATTERN

RMS Gain at Main Lobe  
Calculated / Measured

**1.70 (2.30 dB)**  
**Calculated**

Frequency  
Drawing #

**689 MHz**  
**TLP-H**



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FIGURE 2

Call Letters **KBMT-DT** Channel **50**  
 Location **BEAUMONT, TX**  
 Customer  
 Antenna Type **TLP-24H (C)**

# **TABULATION OF AZIMUTH PATTERN**

Azimuth Pattern Drawing # **TLP-H**

Angle	Field	ERP (kW)	ERP (dBk)
0	0.521	9.6	9.84
10	0.511	9.3	9.67
20	0.477	8.1	9.07
30	0.446	7.1	8.49
40	0.468	7.8	8.91
50	0.560	11.1	10.47
60	0.688	16.8	12.25
70	0.810	23.3	13.67
80	0.891	28.2	14.50
90	0.918	29.9	14.76
100	0.885	27.8	14.44
110	0.834	24.7	13.93
120	0.793	22.3	13.49
130	0.777	21.4	13.31
140	0.816	23.6	13.74
150	0.885	27.8	14.44
160	0.949	32.0	15.05
170	0.984	34.4	15.36
180	1.000	35.5	15.50
190	0.977	33.9	15.30
200	0.917	29.9	14.75
210	0.842	25.2	14.01
220	0.776	21.4	13.30
230	0.768	20.9	13.21
240	0.779	21.5	13.33
250	0.828	24.3	13.86
260	0.885	27.8	14.44
270	0.911	29.5	14.69
280	0.880	27.5	14.39
290	0.788	22.0	13.43
300	0.673	16.1	12.06
310	0.560	11.1	10.47
320	0.467	7.7	8.89
330	0.430	6.6	8.17
340	0.452	7.3	8.61
350	0.495	8.7	9.39

## **Maxima**

Angle	Field	ERP (kW)	ERP (dBk)
2	0.522	9.7	9.86
89	0.918	29.9	14.76
180	1.000	35.5	15.50
270	0.911	29.5	14.69

## **Minima**

Angle	Field	ERP (kW)	ERP (dBk)
32	0.444	7.0	8.45
128	0.776	21.4	13.30
226	0.768	20.9	13.21
330	0.430	6.6	8.17

Call Letters  
Location  
Customer  
Antenna Type

**KBMT-DT** Channel **50**  
**BEAUMONT, TX**  
**TLP-24H**

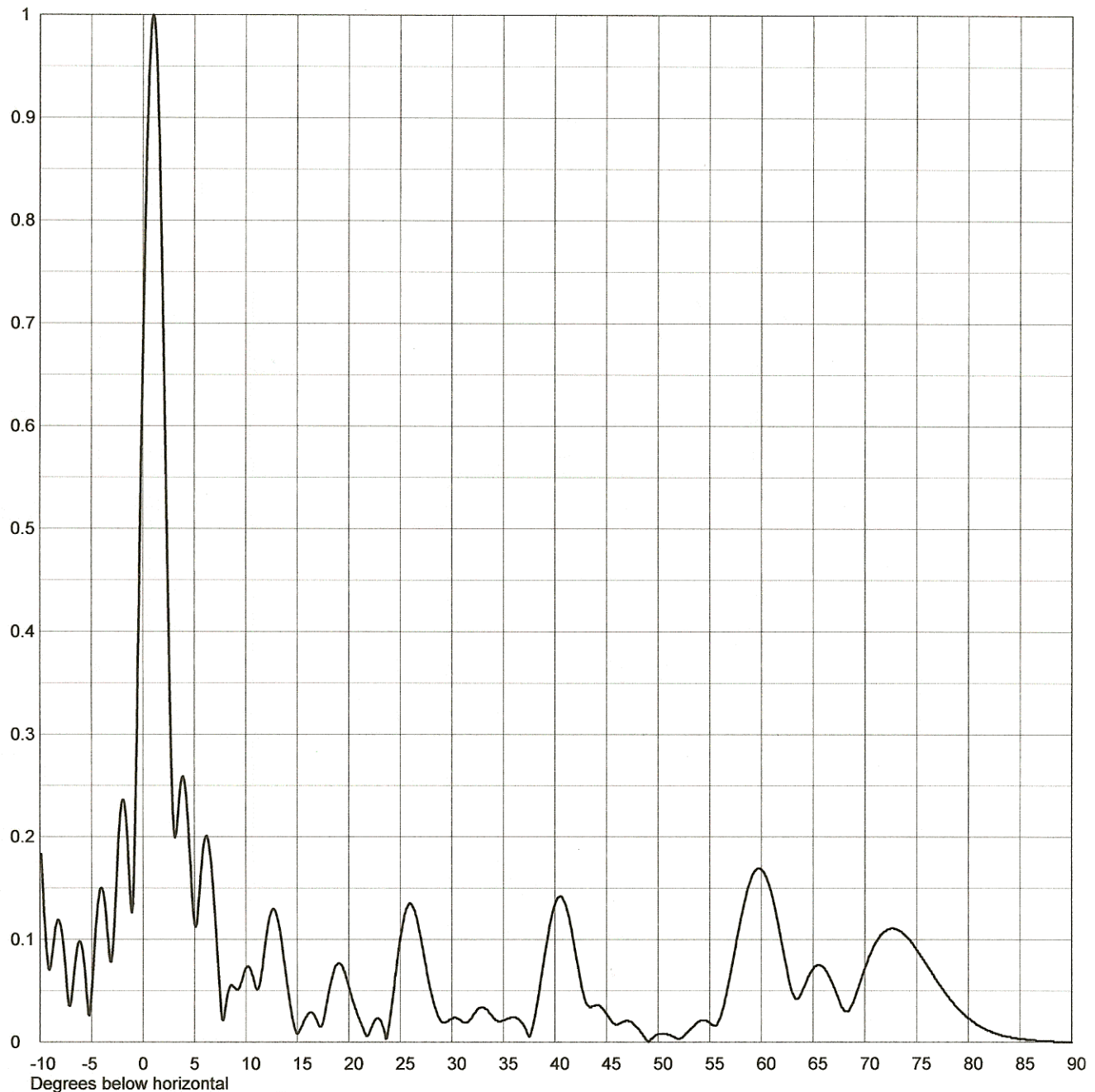
## ELEVATION PATTERN

RMS Gain at Main Lobe  
RMS Gain at Horizontal  
Calculated / Measured

**23.0 (13.62 dB)**  
**10.3 (10.13 dB)**  
**Calculated**

Beam Tilt  
Frequency  
Drawing #

**1.00 Degrees**  
**689.00 MHz**  
**24L230100-90**



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Call Letters  
Location  
Customer  
Antenna Type

**KBMT-DT**  
**Beaumont, TX**  
  
**TLP-24H**

Channel **50**

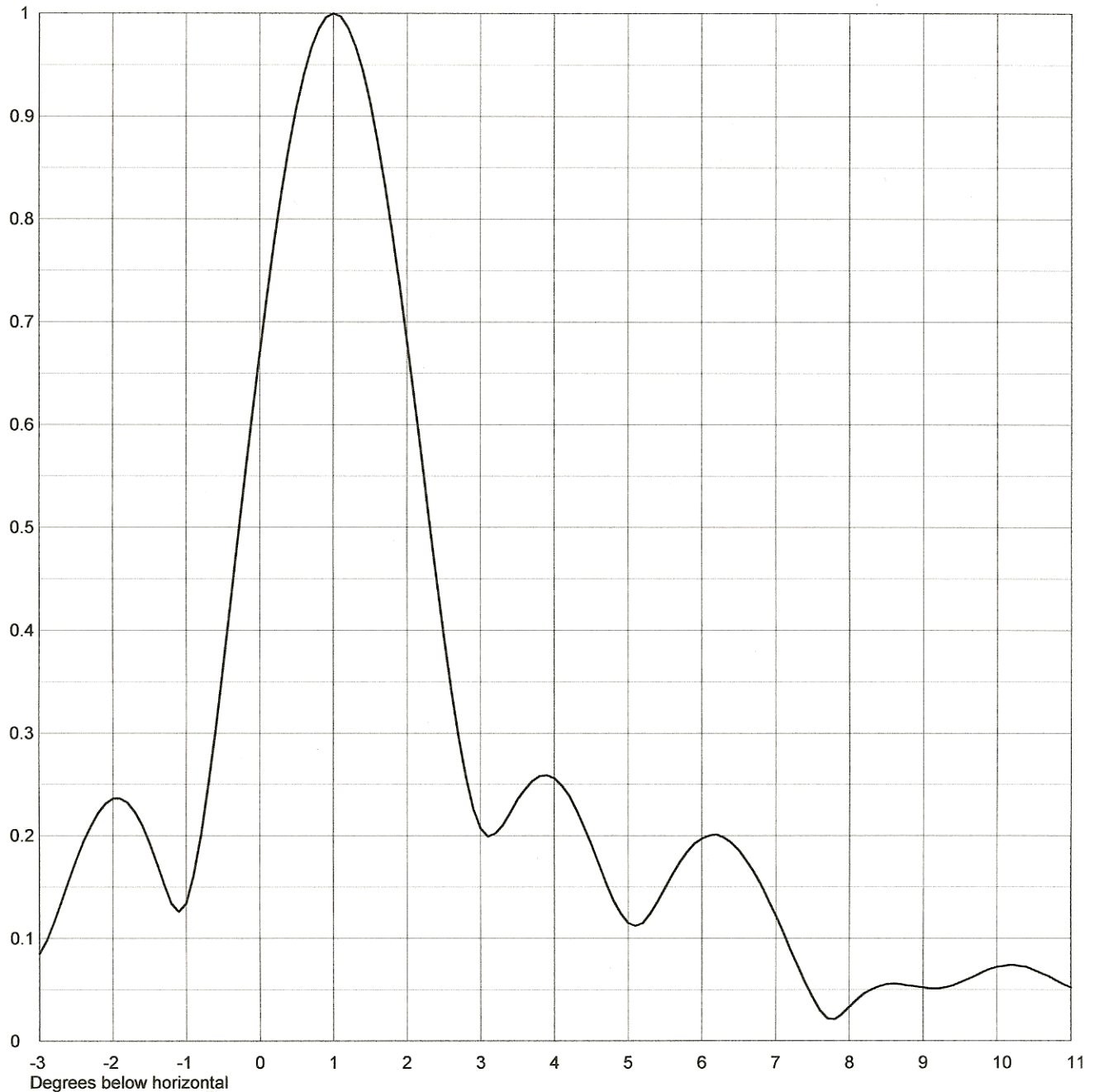
### ELEVATION PATTERN

RMS Gain at Main Lobe  
RMS Gain at Horizontal  
Calculated / Measured

**23.0 (13.62 dB)**  
**10.3 (10.13 dB)**  
**Calculated**

Beam Tilt  
Frequency  
Drawing #

**1.00 Degrees**  
**689.00 MHz**  
**24L230100**



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FIGURE 4

Call Letters **KBMT-DT** Channel **50**  
 Location **Beaumont, TX**  
 Customer  
 Antenna Type **TLP-24H**

**TABULATION OF ELEVATION PATTERN**

Elevation Pattern Drawing # **24L230100-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.202	2.4	0.451	10.6	0.066	30.5	0.023	51.0	0.007	71.5	0.104
-9.5	0.108	2.6	0.343	10.8	0.059	31.0	0.020	51.5	0.005	72.0	0.108
-9.0	0.073	2.8	0.257	11.0	0.052	31.5	0.019	52.0	0.003	72.5	0.111
-8.5	0.112	3.0	0.207	11.5	0.066	32.0	0.025	52.5	0.006	73.0	0.110
-8.0	0.113	3.2	0.202	12.0	0.104	32.5	0.032	53.0	0.011	73.5	0.108
-7.5	0.066	3.4	0.222	12.5	0.128	33.0	0.034	53.5	0.016	74.0	0.103
-7.0	0.039	3.6	0.245	13.0	0.123	33.5	0.031	54.0	0.020	74.5	0.097
-6.5	0.086	3.8	0.258	13.5	0.095	34.0	0.024	54.5	0.021	75.0	0.090
-6.0	0.095	4.0	0.256	14.0	0.057	34.5	0.020	55.0	0.019	75.5	0.083
-5.5	0.049	4.2	0.239	14.5	0.024	35.0	0.021	55.5	0.016	76.0	0.075
-5.0	0.049	4.4	0.209	15.0	0.008	35.5	0.023	56.0	0.023	76.5	0.067
-4.5	0.124	4.6	0.173	15.5	0.017	36.0	0.024	56.5	0.042	77.0	0.059
-4.0	0.150	4.8	0.137	16.0	0.027	36.5	0.022	57.0	0.066	77.5	0.052
-3.5	0.110	5.0	0.115	16.5	0.028	37.0	0.016	57.5	0.093	78.0	0.045
-3.0	0.085	5.2	0.115	17.0	0.018	37.5	0.005	58.0	0.120	78.5	0.039
-2.8	0.116	5.4	0.136	17.5	0.020	38.0	0.022	58.5	0.142	79.0	0.033
-2.6	0.156	5.6	0.162	18.0	0.046	38.5	0.051	59.0	0.159	79.5	0.028
-2.4	0.194	5.8	0.184	18.5	0.068	39.0	0.084	59.5	0.168	80.0	0.023
-2.2	0.222	6.0	0.197	19.0	0.077	39.5	0.114	60.0	0.168	80.5	0.020
-2.0	0.236	6.2	0.201	19.5	0.070	40.0	0.134	60.5	0.160	81.0	0.016
-1.8	0.232	6.4	0.193	20.0	0.054	40.5	0.142	61.0	0.144	81.5	0.013
-1.6	0.210	6.6	0.176	20.5	0.037	41.0	0.135	61.5	0.121	82.0	0.011
-1.4	0.173	6.8	0.152	21.0	0.023	41.5	0.115	62.0	0.095	82.5	0.009
-1.2	0.134	7.0	0.122	21.5	0.010	42.0	0.087	62.5	0.069	83.0	0.007
-1.0	0.134	7.2	0.089	22.0	0.009	42.5	0.059	63.0	0.048	83.5	0.006
-0.8	0.200	7.4	0.057	22.5	0.021	43.0	0.039	63.5	0.042	84.0	0.005
-0.6	0.305	7.6	0.030	23.0	0.022	43.5	0.034	64.0	0.051	84.5	0.004
-0.4	0.425	7.8	0.021	23.5	0.008	44.0	0.036	64.5	0.063	85.0	0.003
-0.2	0.550	8.0	0.033	24.0	0.023	44.5	0.034	65.0	0.071	85.5	0.003
0.0	0.670	8.2	0.046	24.5	0.063	45.0	0.028	65.5	0.075	86.0	0.002
0.2	0.779	8.4	0.053	25.0	0.101	45.5	0.020	66.0	0.073	86.5	0.002
0.4	0.872	8.6	0.056	25.5	0.127	46.0	0.017	66.5	0.065	87.0	0.001
0.6	0.941	8.8	0.054	26.0	0.135	46.5	0.019	67.0	0.054	87.5	0.001
0.8	0.985	9.0	0.052	26.5	0.124	47.0	0.021	67.5	0.041	88.0	0.001
1.0	1.000	9.2	0.051	27.0	0.101	47.5	0.019	68.0	0.031	88.5	0.000
1.2	0.986	9.4	0.054	27.5	0.073	48.0	0.014	68.5	0.031	89.0	0.000
1.4	0.944	9.6	0.060	28.0	0.048	48.5	0.008	69.0	0.042	89.5	0.000
1.6	0.876	9.8	0.067	28.5	0.030	49.0	0.001	69.5	0.057	90.0	0.000
1.8	0.787	10.0	0.072	29.0	0.020	49.5	0.004	70.0	0.072		
2.0	0.681	10.2	0.074	29.5	0.020	50.0	0.008	70.5	0.085		
2.2	0.567	10.4	0.072	30.0	0.023	50.5	0.008	71.0	0.096		

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INNER: 48 DBU, PRINCIPAL CITY  
OUTER: 41 DBU, NOISE - LIMITED  
MIDDLE: 41 DBU, DIPOLE ADJUSTED

### CALCULATED F(50,90) CONTOURS

CHANNEL 12 OF BEAUMONT, INC.

STATION KBMT-DT, BEAUMONT, TEXAS

CH. 50    35.5 KW (MAX-DA)    276 METERS

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FIGURE 6

TABULATION OF AVERAGE ELEVATIONS AND  
CALCULATED DISTANCES TO F(50,90) CONTOURS  
KBMT-DT, BEAUMONT, TEXAS  
CH. 50 35.5 KW (MAX-DA) 276 METERS

NAD '27 Site Coordinates: 30° 11' 26" North Latitude  
93° 53' 08" West Longitude

Antenna Radiation Center: 282 m AMSL

Azimuth (Deg. T.)	Radiation Center Above 3.2-16.1 km Terrain Avg. (meters)	ERP (Kw)	Distance to		
			48 dBu Contour (km)	41.6 dBu* Contour (km)	41 dBu Contour (km)
0	272	9.63	55.3	63.0	63.6
45	274	9.37	55.3	63.0	63.7
90	277	29.9	61.6	68.8	69.5
135	277	22.5	60.1	67.4	68.1
180	278	35.5	62.5	69.8	70.5
225	278	21.1	59.8	67.2	67.8
270	276	29.4	61.4	68.7	69.3
315	273	9.37	55.2	62.9	63.6

Antenna radiation center above terrain average: 276 meters

\*Dipole adjusted contour used in the determination of replication population.

Note: Terrain elevation data obtained from U.S.G.S. 3 arc-second database.