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*Consultants in Electronic Media Technology/Management*

**Technical Statement for  
Grant Media LLC**

**For Modification of Construction Permit:**

**WLAX-DT  
Channel 17  
La Crosse, WI**

**Modification of Permit Issued in File No. BMPCDT-20071228AAT**

***Introduction***

This Technical Statement provides the supplemental technical data and information required for an application on FCC Form 301 “Application for Construction Permit for Commercial Broadcast Station” by Grant Media LLC. (“Grant”) for its digital television facilities at La Crosse, WI. Grant seeks further modification of the currently authorized construction permit for its digital station, Station WLAX-DT on Channel 17. In particular, this Technical Statement addresses the additional information required by Section III-D – DTV Engineering. The instant application requests modification of the construction permit for WLAX-DT issued on January 29, 2008, in File Number BMPCDT-20071228AAT. The application seeks to move the WLAX-DT operation from a recently-planned and approved, side-mount position on the station’s existing tower back to a top-mount on a new, replacement tower, somewhat like the original plan for the station. The antenna now will be at a lower height than the original plan, however, thereby making it financially feasible for WLAX to construct its digital facilities.

When the recent application for modification of the WLAX-DT construction permit was filed in December, 2007, it was believed that the best way to make the installation of the

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station's transmission system financially feasible for Grant was to give up on the installation of a new tower at a significantly greater height and to side-mount the antenna on the existing tower. It was understood that substantial reinforcement of the current tower would be required to permit such a modification. Once having received approval for the change in plans from the FCC, the station proceeded to engage a tower company to design and implement the necessary modifications to the existing tower. As the tower company conducted its structural analysis of the current tower and determined the reinforcement that it would require, it found that for essentially the same cost it could build a new, replacement tower to the same height alongside the current tower and dismantle the current tower shortly after the DTV transition date. Since reinforcing towers is one of the most dangerous activities with respect to tower operations and maintenance, building a replacement tower will be a far more preferable approach, and it will yield a facility for the station that will serve it better into the long term future by enabling the top-mounting of the station's antenna. Thus, despite the recently approved modification of its construction permit, Grant again seeks to modify the WLAX-DT permit in order to obtain the benefits that the new, replacement tower will provide.

WLAX-DT is one of the financially challenged operations for which Grant has obtained from the Commission extensions of the deadline for construction of its DTV facilities. The station has been operating with reduced facilities under the Special Temporary Authorization (STA) in File Number BDSTA-20041122AJL, issued on November 30, 2004, and extended on several occasions, the last extension having been authorized in File Number BEDSTA-20060627AEV, issued on August 21, 2007, with a recent application for a further extension having been filed in File Number BEDSTA-20080201AGC. Grant recently suffered the loss of its founder, long-time CEO, and decision-maker. In the aftermath of that loss, new top management has obtained the financing to construct digital facilities for WLAX-DT with somewhat reduced capacity from those authorized in the original construction permit but still serving both a larger area and population than its current analog signal. The instant modification of that CP is intended to enable maximization of the facility to the greatest extent possible while at the same time constraining construction of the facility to the available budget.

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Thus, it is the purpose of the current application to permit WLAX to construct its maximized facilities in time for the DTV transition. It meets that goal by reducing the cost to implement those facilities to a level that is financially manageable for Grant. Because of the potentially early onset of winter weather in Wisconsin, the work on installation of the antenna and transmission line must be completed during the summer of 2008, or early fall at the latest. Given the time required to receive an antenna after it is ordered and to obtain the services of a tower crew, it is important that Grant start the process as soon as possible. Therefore, expedited consideration of the instant application by the Commission is requested.

### ***Facilities & Implementation Schedule***

The currently proposed facilities include a top-mounted antenna on a new tower to be constructed adjacent to the existing WLAX tower. The proposed height above ground level to the center of radiation of the antenna is 198.3 meters. This corresponds to a height above average terrain of 297.3 meters. Operation by WLAX-DT is proposed at 700 kW ERP. As discussed in detail below, this power level was determined by matching the farthest extent of the contour of the proposed operation with the contour of the facility provided for WLAX-DT in Appendix B of the Memorandum Opinion and Order on Reconsideration of the Seventh Report and Order and Eighth Report and Order in MB Docket 87-268 (FCC 08-72) (“Appendix B”). Full specifications for the proposed facility are provided below in Figure 1. The proposed tower layout is shown below in Figure 2. Since the location is essentially unchanged, no map of the site is included in this document.

The antenna proposed for use by WLAX-DT is a tri-lobe, slot design having 1.0 degree of electrical beam tilt. The antenna will be oriented to place the peaks of the tri-lobe azimuth pattern at 60, 180, and 300 degrees. These are the same azimuth pattern and orientation included in the previously-authorized construction permits. Elevation power gain of the antenna is 20.00 (13.01 dBd) at the vertical beam maximum (1.0 degree below horizontal), 12.00 (10.79 dBd) in the horizontal plane, and 17.37 (12.40 dBd) at 0.477 degree below horizontal, the average depression angle to the radio horizon (computed at 1-degree azimuth intervals). The azimuth power gain is 1.80 (2.55 dB), yielding a total

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power gain in the main beam of 36.00 (15.56 dBd), in the horizontal plane of 21.60 (13.34 dBd), and toward the radio horizon of 31.25 (14.95 dBd).

A plot of the azimuthal radiation pattern in relative field values is included as Figure 3. The azimuthal power pattern expressed in decibels relative to 1 kW (dBk), at the depression angle having maximum power (1 degree depression), is plotted in Figure 4. The tabulated azimuthal field and power values are given in Figure 5. The elevation radiation pattern in relative field values is included as Figure 6. The elevation power pattern expressed in decibels relative to 1 kW (dBk) is plotted in Figure 7. The tabulated elevation field and power values are given in Figure 8. Figure 9 gives the tabulated values of average elevations and contour distances for the eight required radial bearings, calculated as prescribed in §73.625(b). Figure 10 shows the 39- and 48-dBu contours of the proposed facilities on a map of the coverage area, using 1-degree-radial contours, along with the 39-dBu contour of the Appendix B facility. (The 39 dBu value yields the dipole-factor-adjusted, noise-limited contour at Channel 17.)

Because the current application involves a replacement tower that will be a short distance from the existing WLAX tower and because both towers will be erected for an overlap period of several months, a new FAA study and determination of no obstruction now is required. Consequently, an FCC Antenna Structure Registration (ASR) number cannot be supplied at the time of filing this application. Application has been made to the FAA and has been assigned File Number 2008-AGL-2326-OE by that agency. Once FAA approval for the replacement tower has been obtained, the application associated with this Technical Statement will be amended to add the necessary registration numbers. The application is being filed with the Commission in advance of availability of the registration numbers in order to provide the maximum opportunity for the staff to consider the application while still being able to quickly approve it once the FAA approval and registration are obtained.

The antenna proposed in the associated application has a lead time from its manufacturer of four-to-six months, given the manufacturer's current backlog. That backlog still is expected to increase as the DTV transition date draws closer. The weather in the area

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where the station is located can only be counted upon to be conducive to antenna installation work from late spring until early fall. Tower crews to install the antenna remain predicted to be in short supply during the spring, summer, and fall of 2008, which will be the last window for such work prior to the DTV transition date. Given these factors, if the FCC approves the application by the beginning of April, 2008, the installation can take place during early October, 2008. As authorization by the Commission moves beyond April, the earliest possible installation time correspondingly will move through the latter part of 2008.

### ***WLAX-DT Service Area***

With the proposed modification, the WLAX-DT service area would conform as closely as possible to that currently provided for the station in Appendix B. This result would be achieved through use of the same directional antenna pattern, a moderate reduction in antenna elevation, and a corresponding increase in effective radiated power relative to the Appendix B facilities. The reduction in antenna elevation would be from 248 meters to 198.3 meters above ground level. The concomitant power increase would be from 450 kW to 700 kW. The proposed power level has been selected so that the proposed noise-limited contour matches, to the extent possible, the corresponding Appendix B contour without exceeding it in any direction. It should be noted that the instant proposal results in a slightly increased service area relative to that produced by the currently authorized facilities, which were based on an antenna height above ground level of 177 meters and an effective radiated power of 814 kW.

As shown in Figure 10, the noise-limited contour of the Appendix B and the proposed facilities overlie one another in an arc generally to the northeast of the transmitter. Elsewhere, the proposed contour falls within the currently authorized contour, falling short by no more than 4 km along any radial projecting from the transmitter location. The resulting reduction in service area, calculated using 1-degree-radial contours, is approximately 973 km<sup>2</sup> out of 27,060 km<sup>2</sup>, or 3.5 percent. The resulting reduction in service population (without consideration of interference losses) is 45,492 out of 472,037 people, or 9.6 percent. Since the station has not been in operation yet with maximized facilities, these reductions do not represent losses in service but only decreases in

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potential service. Moreover, these values represent an improvement over the losses implicit in the construction permit recently approved by the Commission, which are approximately 1506 km<sup>2</sup>, or 5.6 percent, in area, and 54,462, or 11.5 percent, in population.

As is evident from Figure 10, the 48 dBu contour required by §73.625(a)(1) extends well beyond the principal community of La Crosse. As required by §73.625(a)(2), shadow studies show that “there is not a major obstruction in the path over the principal community to be served.”

### ***Interference to Other Stations***

Although the contour of the proposed facility falls within the contour of the currently authorized facility, in an abundance of caution, interference studies of the proposed facility were conducted using the Commission’s TV\_Process program. Given the current state of flux in the various tables and databases that the Commission maintains, resulting from the channel allotment process now almost completed, four different databases were evaluated for potential interference. The databases used are the current version of the CDBS, a database comprising the information from the 7<sup>th</sup> Further Notice of Proposed Rulemaking in the DTV proceeding – Appendix B (10/20/2006), one comprising Appendix B of the 7<sup>th</sup> Report and Order in the DTV proceeding (8/6/2007), and one comprising Appendix G of the 8<sup>th</sup> Further Notice of Proposed Rulemaking (also 8/6/2007).

The TV\_Process program identified a total of 13 other stations that potentially could be impacted by WLAX-DT. During the initial culling conducted by the program, two stations were identified as “beyond the site to nearest cell evaluation distance,” and four stations were noted with the designation that the “proposal causes no interference.” That left seven stations to which the culling process found the possibility of interference and to which the program continued the interference analysis routine. The data in Table 1 are the study results for those seven remaining stations.

**Table 1 — Interference Analysis to Stations Potentially Affected**

Chnl	Call Sign	City, State	ARN	Scenarios	IX %
17	KDSM-TV	Des Moines, IA	BLCT-20021226AAD	6	0.0132
17	WTVO(TV)	Rockford, IL	BMLCT-20021024AAY	2	0.2032
17	KQDS-DT	Duluth, MN	BPCDT-19991028ABI	1	0.1896
17	KTCI-TV	St Paul, MN	BMLET-20050322AGC	1	0.5323
18	KYIN-DT	Mason City, IA	BMPEDT-20060714ABL	3	0.0869
18	WQOW-TV	Eau Claire, WI	BLCT-20000728AEE	1	0.000
19	WXOW-TV	La Crosse, WI	BLCT-20010403ABI	4	0.0891

The results of the four separate studies using the four databases are combined in Table 1. The leftmost four columns identify the station and facility studied, while the fifth column indicates the largest number of scenarios identified and studied for each station by the TV\_Process program. The interference percentage values presented in the right-hand column are the worst case values determined in any of the four studies for each station. The values given are the raw interference increase values obtained from the studies, which compare the interference predicted from the proposed facility with the interference predicted using the Commission’s DTV Plan facility, as specified in the Sixth Report and Order, Appendix B, as amended.

The Commission’s rules currently pertinent to this sort of application specify the *de minimis* levels of permitted new predicted interference, i.e., two percent increased interference loss to each affected station with a cap of ten percent interference loss to any individual station. In the Report and Order in the DTV Third Periodic Review NPRM, the Commission decided to reduce the permissible new predicted interference after the DTV transition to 0.5 percent. There is one station shown in Table 1 to which the

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predicted interference increase exceeds 0.5 percent, but it is an analog station that no longer will be on the air after the DTV transition date. Thus, the level of interference predicted to that station is covered by the current *de minimis* rules up to the transition date and is immaterial thereafter. New interference to all other stations falls within the new constraint of 0.5 percent. Consequently, there is no reason based on interference considerations that the present application should not be granted expeditiously.

### ***Canadian Coordination***

The WLAX transmitter site is outside the Canadian coordination zone, and La Crosse, WI is not listed in the Letter of Understanding between the FCC and Industry Canada as one of the cities with stations requiring coordination. Thus, there is no need for the present application to be coordinated with Canada. Even if the station were within the coordination zone near the Canadian border, no coordination would be necessary because the proposed facilities fall within those previously approved by the Commission.

### ***Environmental Impact / Radio Frequency Radiation***

None of the conditions specified in Section 1.1307 that would require the preparation of an Environmental Assessment pertain with respect to the proposed facility at Tschumper Ridge. In particular, because it will be mounted on a replacement tower at an existing site, the new operation does not implicate many of the causes for further investigation and preparation of further reports.

With respect to Radio Frequency Radiation exposure, OET Bulletin 65 provides methods for evaluating the level of exposure for both employees (occupational/controlled situations) and non-employees (general population/uncontrolled situations). The combination of the antenna radiation pattern, as provided in the manufacturer's technical specifications, with the antenna height above ground level and the operating power level of the station indicates that the potential exposure would be less than 5 percent of the Maximum Permissible Exposure (MPE) limit for general population / uncontrolled situations. Specifically, application of the formulas provided in OET-65 Supplement A yields a value less than one percent (actually 0.71 percent) of the general population /

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uncontrolled MPE. Thus, the proposed operation is categorically excluded from having to submit a detailed RF exposure analysis of the site.

Notwithstanding the foregoing, Grant recognizes its responsibility for the safety and health of employees and contractors when exposed to RF radiation conditions. It will take the steps necessary to assure that personnel working in its facilities and on the tower and antenna are protected from exposure to RF radiation levels exceeding those specified in the Commission's rules. The steps to be taken will include measurements and monitoring as well as power reductions or turning off the transmitter if necessary to ensure a safe working environment.

### ***Notifications***

The site at Tschumper Ridge is not in proximity to any of the government radio astronomy installations named in Section 73.1030, nor is it proximate to any of the named radio receiving locations. The nearest FCC monitoring station, furthermore, is over 450 km distant. Thus, none of the notifications mandated or recommended by Section 73.1030 is required in this instance.

### ***Summary***

Given all of the considerations involved with Grant and WLAX — its financial difficulties in constructing its digital facility, its loss of its founder and decision-maker, its having now obtained sufficient funding that allows it to build its new digital facility, and the necessity to install the new antenna during the one remaining good-weather period prior to the DTV transition, in combination with the growing lead time in obtaining the antenna — it is eminently in the public interest to permit WLAX to build its new digital facility as soon as possible. The result will be to enable digital operation by another station suffering hardship, permitting it to begin serving an area and a population greater than that served by its current analog service prior to the DTV transition date. With these many factors in mind, it is requested that the Commission approve the application of Grant Media LLC described herein as expeditiously as possible.

**Figure 1 — Technical Specifications — Proposed WLAX-DT Facility  
Channel 17 — La Crosse, WI**

**Frequency**

Channel	17
Frequency Band	488 - 494 MHz
Center Frequency	491 MHz

**Location**

Site	Tschumper Ridge, La Crescent, MN
Geographic Coordinates (NAD27)	43° 48' 16.14" N 91° 22' 19.29" W
Tower Registration (FAA Study Number)	TBD (2008-AGL-2326-OE)

**Elevation**

Elevation of site above mean sea level	367.6 m
Overall height of tower above site elevation	206.0 m
Overall height of tower above mean sea level	573.6 m
Height of antenna radiation center above site elevation	198.3 m
Elevation of average terrain (45-degree spaced radials, 3.2-16.1 km)	268.6 m
Height of antenna radiation center above mean sea level	565.9 m
Height of antenna radiation center above average terrain (HAAT)	297.3 m

**Antenna**

Manufacturer	Dielectric
Model	TFU-22JTH-R T180
Description	Top-Mounted UHF Cavity
Orientation (rotation around vertical axis)	Peaks at 60, 180, & 300 degrees true
Electrical beam tilt	1.0°
Mechanical beam tilt	None
Polarization	Horizontal
Gain (in horizontal plane – 0° depression)	21.60 (13.34 dB)
Gain (peak of beam – 1.0° depression)	36.00 (15.56 dB)

**Power**

Effective radiated power (ERP) (main beam – 1.0° depression)	700 kW
Effective radiated power (ERP) (toward avg. radio horizon – 0.477° dn.)	608 kW
Effective radiated power (ERP) (horizontal plane)	420 kW

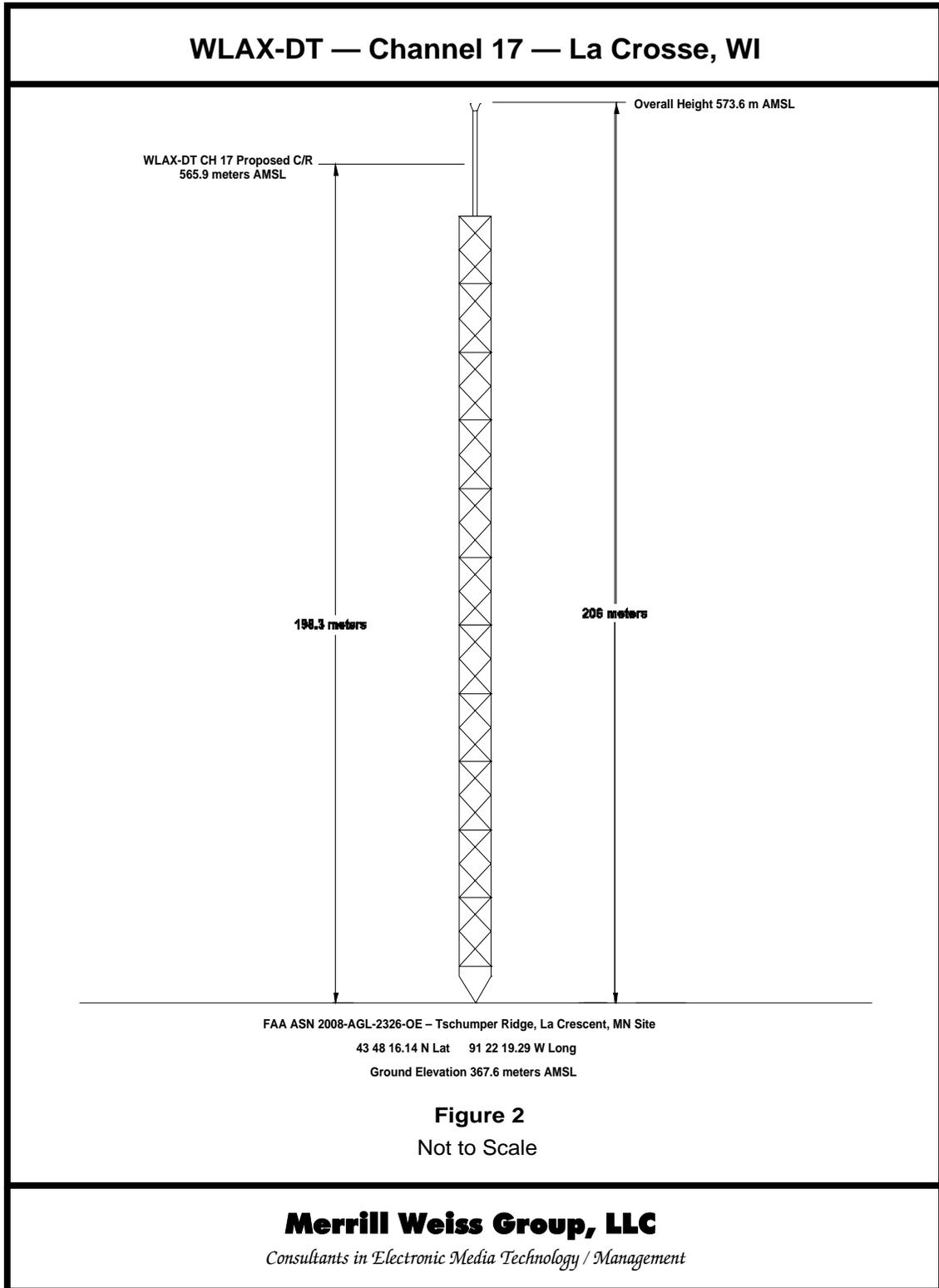


Figure 2 — Proposed Tower Layout for WLAX-DT

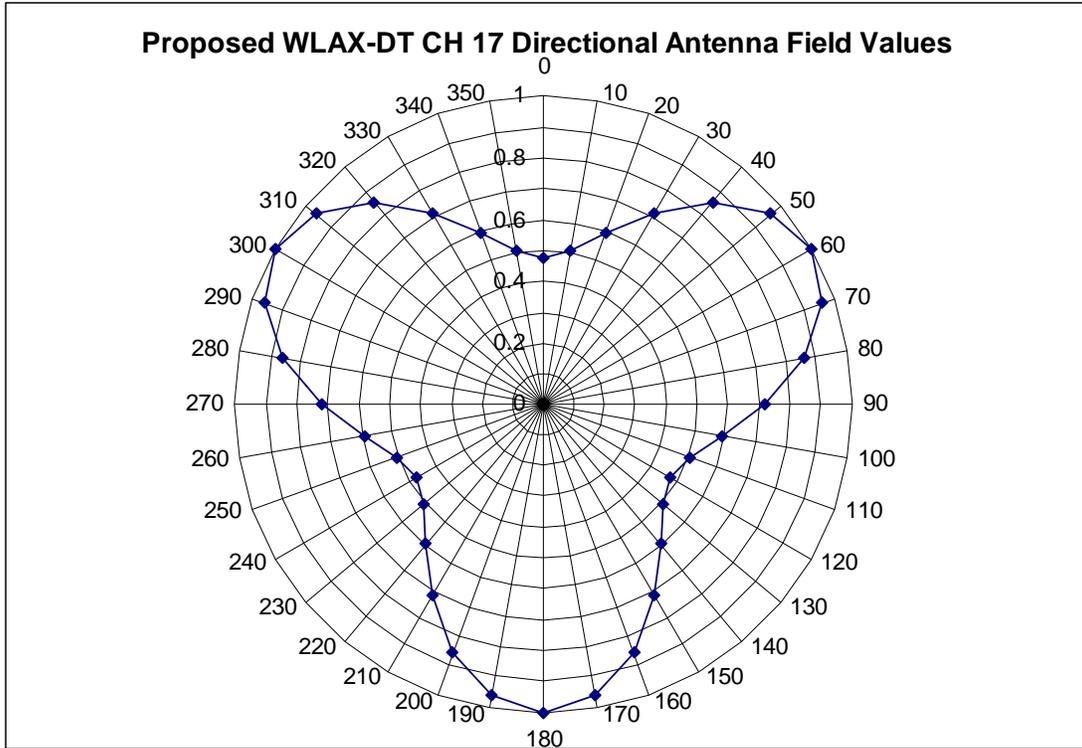


Figure 3 — WLAX-DT Azimuth Pattern in Relative Field Values

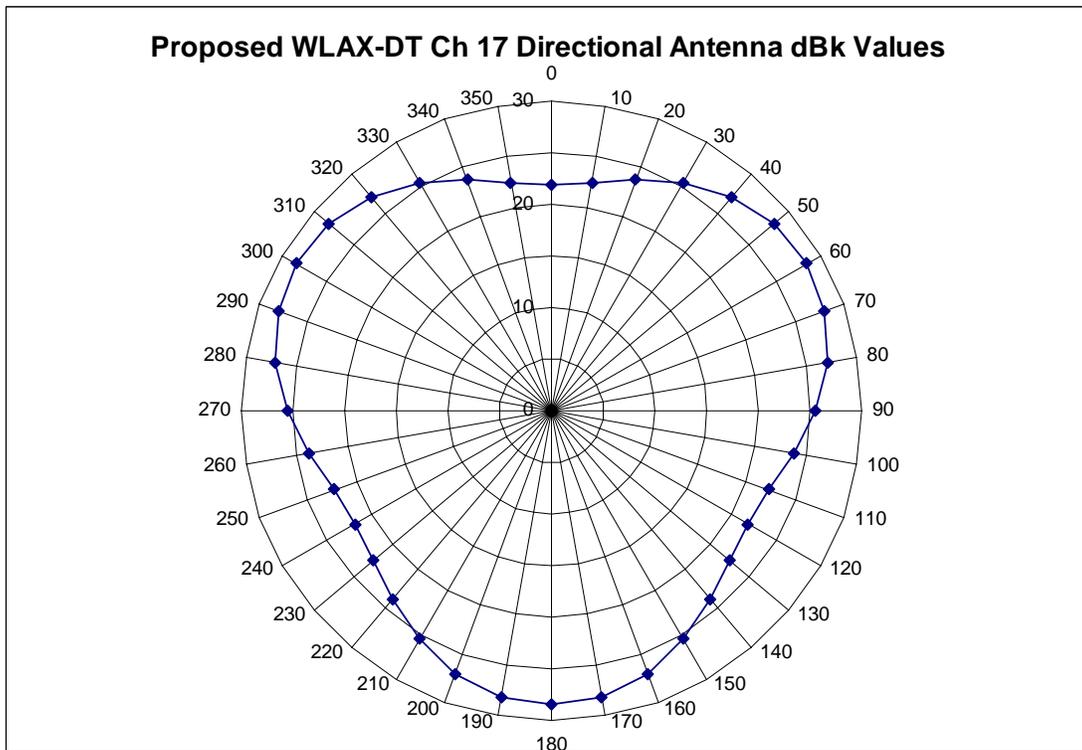


Figure 4 — WLAX-DT Azimuth Pattern in dBk (at Depression w/Maximum)

**Figure 5 — WLAX-DT Azimuthal Radiation Pattern Tabulated Values**

Azimuth	Relative Field	Effective Radiated Power (dBk)	Azimuth	Relative Field	Effective Radiated Power (dBk)
min 0	0.473	21.948	max 180	1.000	28.451
10	0.501	22.448	190	0.961	28.105
20	0.587	23.824	200	0.856	27.100
30	0.718	25.573	210	0.718	25.573
40	0.856	27.100	220	0.587	23.824
50	0.961	28.105	230	0.501	22.448
max 60	1.000	28.451	min 240	0.473	21.948
70	0.961	28.105	250	0.501	22.448
80	0.856	27.100	260	0.587	23.824
90	0.718	25.573	270	0.718	25.573
100	0.587	23.824	280	0.856	27.100
110	0.501	22.448	290	0.961	28.105
min 120	0.473	21.948	max 300	1.000	28.451
130	0.501	22.448	310	0.961	28.105
140	0.587	23.824	320	0.856	27.100
150	0.718	25.573	330	0.718	25.573
160	0.856	27.100	340	0.587	23.824
170	0.961	28.105	350	0.501	22.448

Derived from data supplied by manufacturer

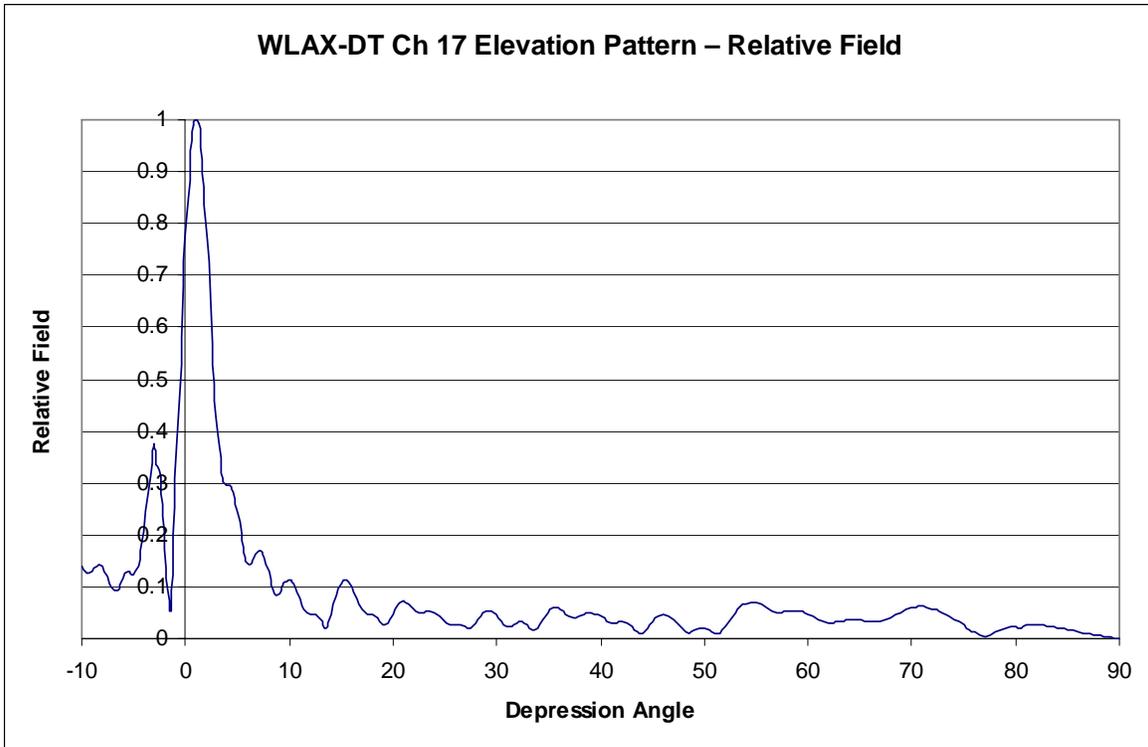


Figure 6 — WLAX-DT Elevation Pattern in Relative Field Values

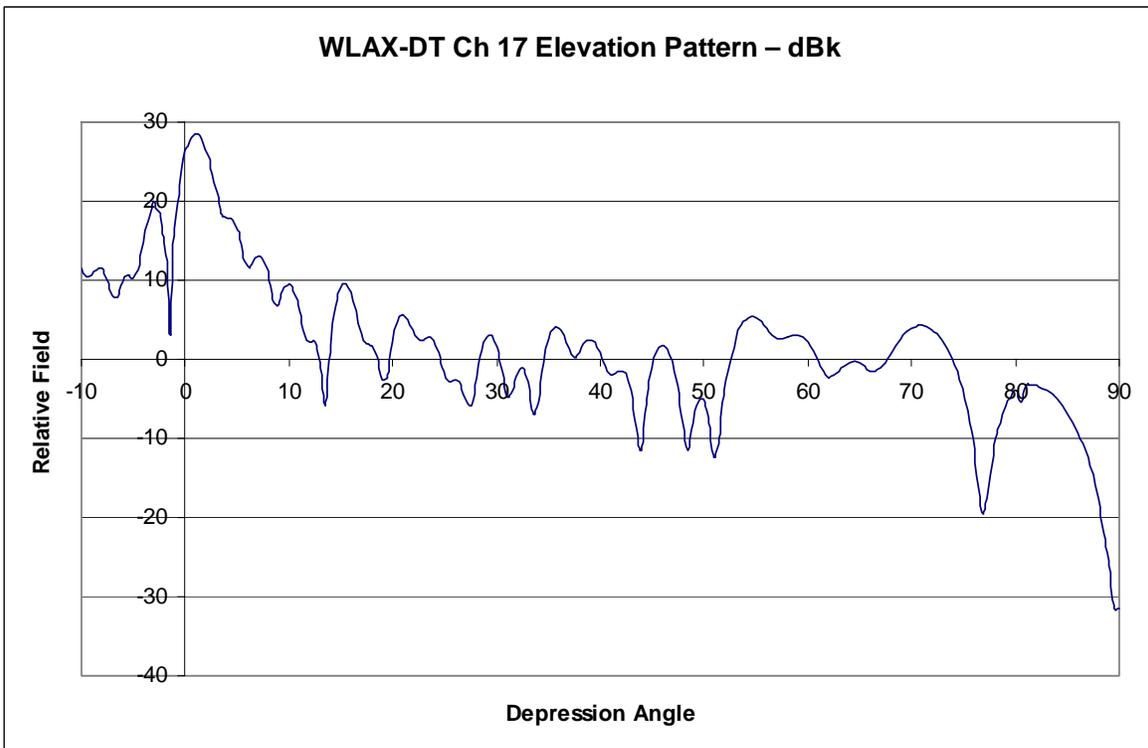


Figure 7 — WLAX-DT Elevation Pattern in dBk (at Bearing w/Maximum)

**Figure 8 — WLAX-DT Elevation Radiation Pattern Tabulated Values**

Depression Angle	Relative Field	Effective Radiated Power (dBk)	Depression Angle	Relative Field	Effective Radiated Power (dBk)
-5.0	0.124	10.319	9.0	0.086	7.141
-4.5	0.138	11.249	9.5	0.105	8.871
-4.0	0.206	14.728	10.0	0.113	9.513
-3.5	0.288	17.639	10.5	0.103	8.701
-3.0	0.377	19.978	11.0	0.077	6.181
-2.5	0.313	18.354	11.5	0.053	2.936
-2.0	0.205	14.686	12.0	0.048	2.076
-1.5	0.057	3.475	12.5	0.048	2.076
-1.0	0.254	16.548	13.0	0.036	-0.423
-0.5	0.529	22.867	13.5	0.019	-5.974
0.0	0.773	26.215	14.0	0.046	1.706
0.5	0.938	27.888	14.5	0.082	6.727
1.0	1.000	28.451	15.0	0.107	9.039
1.5	0.946	27.967	15.5	0.113	9.513
2.0	0.803	26.545	16.0	0.101	8.537
2.5	0.609	24.125	16.5	0.077	6.181
3.0	0.426	21.039	17.0	0.055	3.258
3.5	0.321	18.562	17.5	0.047	1.893
4.0	0.297	17.906	18.0	0.046	1.706
4.5	0.288	17.638	18.5	0.040	0.492
5.0	0.250	16.410	19.0	0.028	-2.606
5.5	0.189	13.963	19.5	0.029	-2.301
6.0	0.146	11.738	20.0	0.048	2.076
6.5	0.152	12.085	20.5	0.065	4.709
7.0	0.169	13.009	21.0	0.072	5.598
7.5	0.162	12.611	21.5	0.068	5.101
8.0	0.129	10.663	22.0	0.058	3.720
8.5	0.092	7.714	22.5	0.051	2.602

Derived from data supplied by manufacturer

**Figure 9 — Tabulation of 41 and 48 dBu Contour Derivations  
WLAX-DT Channel 17 at 700 kW**

Azimuth	Average Terrain Elevation (meters)	Antenna Height Above Average Terrain (meters)	Effective Radiated Power (kw) to Radio Horizon	F(50,90) Contour Distances (km)	
				39 dBu (Noise Limited)	48 dBu (City Grade)
0°	271	295	156.610	84.1	71.1
45°	223	343	583.498	100.5	83.8
*90°	237	329	360.867	95.1	79.1
135°	230	336	202.611	90.9	76.-0
180°	294	272	700.000	94.1	77.4
225°	282	284	203.365	84.7	71.6
270°	305	261	360.867	86.3	72.7
315°	308	258	583.498	90.4	75.1

\* Heading to Principal Community — La Crosse, WI

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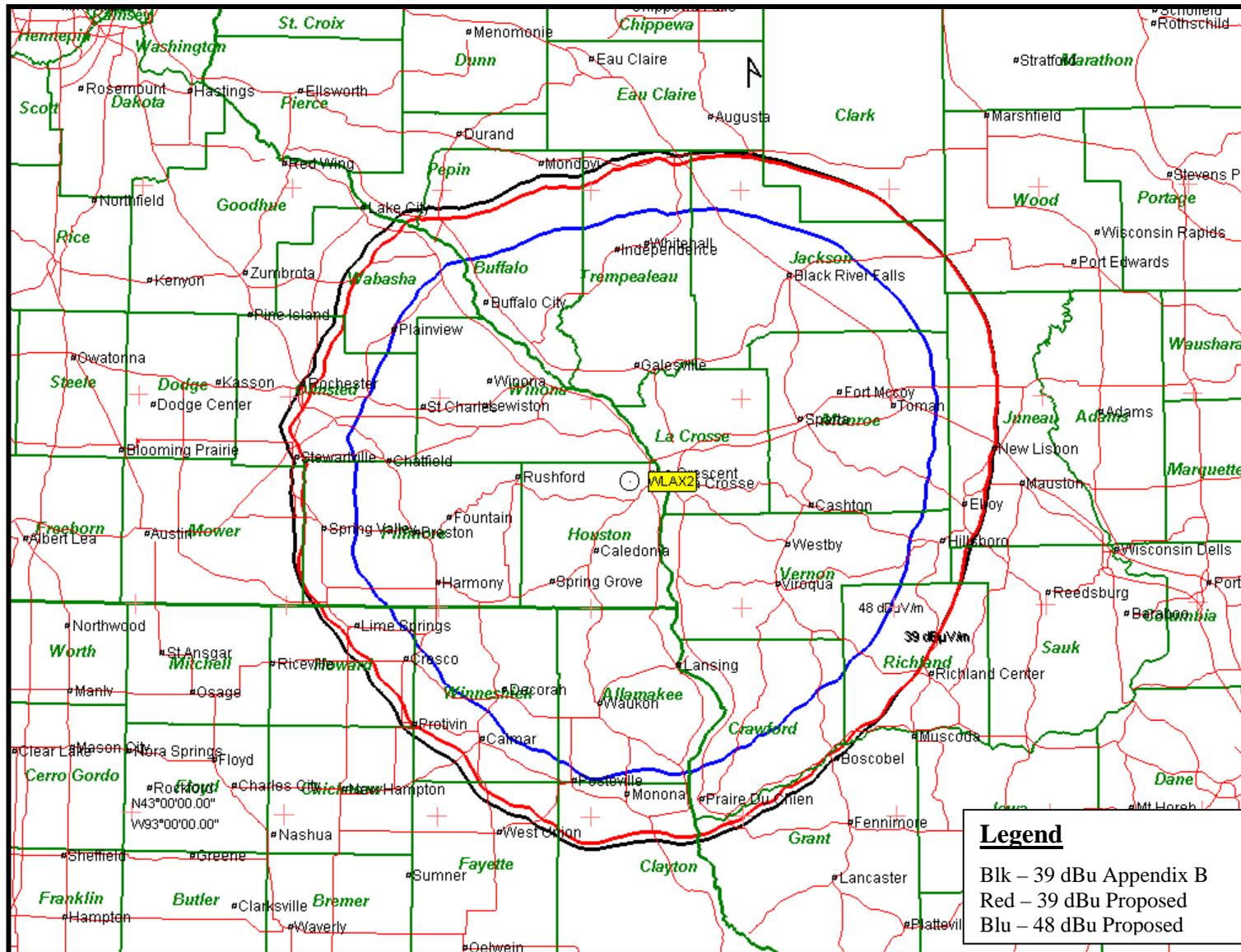


Figure 10 — WLAX-DT Contour Comparison: Appendix B & Proposed Facilities