



ENGINEERING STATEMENT

**In support of a request to
Amend the License to Cover Application
For Digital Channel 38
KNCT-DT Belton, TX
200 kW ERP 360 m HAAT**

PURPOSE

MARSAND, INC. has been retained by Central Texas College (CTC), permittee of KNCT-DT, CH38 of Belton, TX, to prepare this engineering statement in support of a request to amend the license to cover application. A discrepancy was found between the antenna model numbers on the Construction Permit(CP) and the application for License to Cover. This amendment seeks to correct this discrepancy and provide the associated technical data.

DISCUSSION

The Federal Communications Commission (Commission) originally allotted Channel 47 as the paired digital television (DTV) channel for KNCT analog channel 46. An application for CP was granted (BPEDT-20000420AAD) with an ERP of 200 kW and Height Above Average Terrain (HAAT) of 393 m on Digital Channel 47. Subsequently, CTC petitioned the Commission for a change of channel Allotment. This was accepted by the Commission which issued a Notice of Proposed Rule Making (NPRM) in MB Docket No. 02-271 (DA 02-2201) Adopted September 4, 2002 and Released September 10, 2002. An application to modify the original CP to conform with the newly created Allotment was granted (BMPEDT-20030319ADS). However, the technical data, as submitted, were incorrect having been carried over, unmodified, from the original CP.

The antenna specified in the CP is an Andrew ATW25H5-HTP1L-46H which was specified in the original CP filed when the allotted channel was still CH 47. The correct

antenna is an Andrew ATW30H4-HSCX-38 which replicates the pattern specified under the newly allotted CH 38. Appendix A contains the Engineering Statement and Exhibits as submitted for the CP modification in 2003 which include the antenna specifications. Appendix B contains the Engineering Statement and Exhibits as submitted for the Petition for Rulemaking in 2002 to change the allotted digital channel from 47 to 38.

CONCLUSION

It is respectfully requested that the Commission grant the request to amend the License to Cover as stated herein and in the accompanying attachments.



MARSAND, INC.

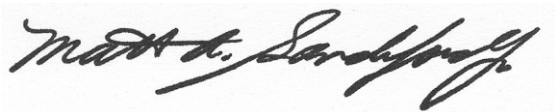
Matthew A. Sanderford, Jr., P.E.

DECLARATION

Matthew A. Sanderford, Jr., P.E., declares and states that he is a graduate Electrical Engineer with a Bachelor of Science Degree in Electrical Engineering from the University of Texas at El Paso, a Licensed Professional Engineer in the State of Texas, and his qualifications are known to the Federal Communications Commission, and that he is President of MARSAND, INC., a Registered Professional Engineering firm in the State of Texas, and that firm has been retained by Central Texas College (CTC), to perform the engineering support as contained in this report.

All facts contained herein are true of his own knowledge except where stated to be on information or belief provided by CTC, and as to those facts, he believes them to be true.

I declare under penalty of perjury that the foregoing is true and correct.



Matthew A. Sanderford, Jr., P.E.

President - MARSAND, INC.

Executed this 15th day of March, 2007

State of Texas

Appendix A

SECTION V-D - DTV BROADCAST ENGINEERING DATA

FOR COMMISSION USE ONLY

File No. _____

SSB Referral Date _____

Referred By _____

Name of Applicant

Central Texas College

Call Letters (if issued)

KNCT-DT

Complete Questions 1-5 of the Certification Checklist and provide all data and information for the proposed facility, as requested in Items 1-22, below. If an item is not applicable, enter N/A.

Certification Checklist: A correct answer of "Yes" to all of the questions below will ensure an expeditious grant of a construction permit. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

1. The proposed DTV facility complies with 47 C.F.R. Section 73.622 in the following respects:

(a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622.

☒ Yes ☒ No

See Engineering Statement

(b) It will operate from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622.

☒ Yes ☐ No

(c) It will operate with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622.

☐ Yes ☒ No

See Engineering Statement

2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307.

☒ Yes ☐ No

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

Application Data:

1. Channel

(a) DTV Channel No. 38

(b) Associated analog TV station channel no., if any 46

2. Principal community to be served:

City or Town

Belton

State

TX

3. Effective radiated power (average power): (in the main lobe of radiation, if directional)

200.0 kw

4. Height of antenna radiation center above average terrain (HAAT): (to the nearest meter)

360 meters

5. Purpose of Application: (check appropriate boxes)

- | | |
|--|---|
| <input type="checkbox"/> Construct a new (main) facility | <input type="checkbox"/> Construct a new auxiliary facility |
| <input checked="" type="checkbox"/> Modify construction permit for main facility | <input type="checkbox"/> Modify construction permit for auxiliary antenna |
| <input type="checkbox"/> Modify licensed main facility | <input type="checkbox"/> Modify licensed auxiliary antenna |

If purpose is to modify, indicate the nature of change(s) by checking appropriate box(es) and specify the file number(s) of the authorizations affected.

- | | |
|--|--|
| <input type="checkbox"/> Antenna supporting structure height | <input type="checkbox"/> Effective radiated power |
| <input checked="" type="checkbox"/> Antenna height above average terrain | <input checked="" type="checkbox"/> Channel |
| <input type="checkbox"/> Antenna location | <input checked="" type="checkbox"/> Antenna system |
| <input type="checkbox"/> Other (summarize) | |

File Number(s) BPEDT-20000420AAD

6. Exact location of transmitting antenna..

- (a) Give address, city/state or if no address, specify distance and bearing relative to the nearest town or landmark.
Intersection of Cedar Knob Rd. and FM2484 near Youngsport, TX
- (b) Geographical coordinates (to nearest second). If mounted on element of an AM array, specify coordinates of center of array. Otherwise, specify tower location. Specify South Latitude and East Longitude where applicable; otherwise, North Latitude or West Longitude will be presumed. (The Commission requires coordinates based on NAD 27.)

Latitude	30°	59'	08"	Longitude	97°	37'	51"
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7. (a) Elevation: (to the nearest meter)

- | | |
|---|-------------------|
| (1) of site above mean sea level; | <u>282</u> meters |
| (2) of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and | <u>348</u> meters |
| (3) of the top of supporting structure above mean sea level [(a)(1) + (a)(2)]. | <u>630</u> meters |

(b) Height of radiation center: (to the nearest meter)

- | | |
|---|-------------------|
| (1) above ground; and | <u>308</u> meters |
| (2) above mean sea level [(a)(1) + (b)(1)]; | <u>590</u> meters |

8. Attach as an Exhibit sketch(es) of the supporting structure, labeling all elevations required in item 7 above. If mounted on an AM directional array element, specify heights and orientations of all array towers, as well as location of any FM radiator.

Exhibit No. E-1a

9. Antenna

(a) Manufacturer Andrew (b) Model No. ATW30H4-HSCX-38

(c) Is a directional antenna proposed?

☒ Yes ☐ NoIf Yes, specify major lobe azimuth(s) 20 degrees True and attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c).Exhibit No.
E-1g

(d) Is electrical beam tilt proposed?

☒ Yes ☐ NoIf Yes, specify 1.00 degrees electrical beam tilt and attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c).Exhibit No.
E-1h

(e) Is mechanical beam tilt proposed?

☐ Yes ☒ No

If Yes, specify _____ degrees mechanical beam tilt toward azimuth _____ True and attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c).

Exhibit No.
N/A

(f) The proposed antenna is: (check only one box)

☒ Horizontally polarized ☐ Circularly polarized ☐ Elliptically polarized ☐ Other: _____

10. Will the antenna be mounted on an antenna structure which has been registered with the Commission, to include the proposed antenna installation?

☒ Yes ☐ No

If Yes, provide the seven digit registration number and, unless item 11 also applies, proceed to item 15.

1058073

11. Has the owner of the antenna structure filed an application for registration with the Commission that will include the proposed facility?

☐ Yes ☐ No

If yes, provide the date FCC Form 854 was filed and proceed to item 15.

12. (If applicable) If the antenna structure is not yet registered but will be under the Commission's phased registration plan, has the FAA previously determined that the structure would not adversely affect safety in air navigation?

☐ Yes ☐ No

If Yes, proceed to item 15.

13. Antenna structure will be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town or settlement where it is evident beyond all reasonable doubt that the structure is so shielded that it will not adversely affect safety in air navigation, and therefore does not require registration.

☐ Yes ☐ No

If yes, submit as an Exhibit a detailed explanation and/or diagram to support your claim and skip to item 15.

Exhibit No.

14. Antenna structure does not otherwise meet FAA Notification criteria as defined under 47 C.F.R. Section 17.7 and therefore does not require registration. ☐ Yes ☐ No

If Yes, give reason below.

15. Is the supporting structure the same as that of another station(s) or proposed in another pending application(s)? ☒ Yes ☐ No

If Yes, give call letter(s) or file number(s) or both. KNCT (TV) & KNCT (FM)

16. Does the application propose to correct previous site coordinates? ☐ Yes ☒ No

If Yes, list old coordinates.

Latitude	°	'	"	Longitude	°	'	"
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17. Attach as an Exhibit a topographic map that shows clearly, legibly, and accurately, the location of the proposed transmitting antenna. This map must comply with the provisions of 47 C.F.R. Section 73.625(b). The map must further display clearly and legibly the original printed contour lines and data as well as latitude and longitude markings, and must bear a scale of distance in kilometers.

Exhibit No.
E-1a

18. Attach as an Exhibit a map (*Sectional Aeronautical Chart or equivalent*) which shows clearly, legibly, and accurately, and with the original printed latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.
E-1b

- (a) the proposed transmitting location, and the radials along which profile graphs have been prepared;
- (b) the DTV coverage contour as established in 47 C.F.R. Section 73.625(b); and
- (c) the legal boundaries of the principal community to be served.

19. Terrain and coverage data (to be calculated in accordance with 47 C.F.R. Section 73.625(b))

Source of terrain data: (*check only one box below*)

☐ Linearly interpolated 30-second database (Source: _____)

☐ Linearly interpolated 3-second database (Source: _____)

☐ 7.5 minute topographic map

☒ Other (*briefly summarize*) USGS NAD83 3 Second Terrain Database from V-Soft Comm.

Radial bearing (degrees True)	Height of radiation center above average elevation of radial from 3 to 16 km (meters)	Predicted distance to the DTV Coverage Contour (kilometers)
* 66	402.1	91.1
0	362.9	89.2
45	388.1	90.8
90	389.6	91.4
135	372.1	85.3
180	354.9	68.6
225	312.3	66.7
270	355.5	85.2
315	346.9	88.0

*Radial through principal community, if not one of the major radials. This radial should NOT be included in the calculation of HAAT.

20. Does the proposed facility satisfy the interference protection provisions of 47 C.F.R. Section 73.623(a)? ☒ Yes ☐ No
(Applicable only if **Certification Checklist** items 1(a), (b), or (c) are answered "No.")

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

Exhibit No.

21. 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.
N/A

21. Environmental Statement (*See 47 C.F.R. Section 1.1301 et seq*)

- (a) If a Commission grant of this application comes within 47 C.F.R. Section 1.1307, such that it may have a significant environmental impact, submit as an Exhibit an Environmental Assessment required by 47 C.F.R. Section 1.1311.


Exhibit No.
E-2

- (b) If No, explain briefly why not.

- (c) Pursuant to OST Bulletin No. 65, the applicant must explain in an Exhibit what steps will be taken to limit the RF radiation exposure to the public and to persons authorized access to the tower site. In addition, where there are multiple contributors to radio frequency radiation, you must certify that the established RF radiation exposure procedures will be coordinated with all stations.

CERTIFICATION

I certify that I have prepared this Section of this application 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 (Typed or Printed)	Relationship to Applicant (e.g., Consulting Engineer)
Matthew A. Sanderford, Jr., P.E.	Consulting Engineer
Signature	Address (include ZIP Code)
	P.O. Box 485 Alvarado, TX 76009
Date	Telephone No. (include Area Code)
March 12, 2003	(817) 790-7900



ENGINEERING STATEMENT

In support of a request to

Modify Construction Permit for Main Facility

For Digital Channel 38

KNCT-DT Belton, TX

200 kW ERP 360 m HAAT

PURPOSE

MARSAND, INC. has been retained by Central Texas College (CTC), permittee of KNCT(TV), CH46 of Belton, TX, to prepare this engineering statement in support of a request to Modify Construction Permit for Main Facility. The Federal Communications Commission (Commission) allotted Channel 47 as the paired digital television (DTV) channel for KNCT analog channel 46. A Construction Permit (CP) exists (BPEDT-20000420AAD) with an ERP of 200 kW and Height Above Average Terrain (HAAT) of 393 m on Digital Channel 47.

Subsequently, CTC petitioned the Commission for a change of channel Allotment. This was accepted by the Commission which issued a Notice of Proposed Rule Making (NPRM) in MB Docket No. 02-271 (DA 02-2201) Adopted September 4, 2002 and Released September 10, 2002. It is proposed herein to modify the CP to channel 38, lower the radiation center to 360 m HAAT, and utilize a different antenna pattern.

DISCUSSION

In order to provide DTV service, CTC proposes to side-mount a directional antenna on their existing tower in Youngsfort, TX (Antenna Structure Registration Number 1058073). The Radiation Center for the proposed antenna would necessarily be lower in height than that applied for in the existing CP as the existing analog service uses a top mount antenna on the same structure at the 393 m HAAT. The side-mount antenna will require fewer tower

modifications to support it and its accompanying transmission line thus reducing off air time for the analog service and the other two existing FM services co-located on the same tower..

The move to DTV channel 38 would alleviate existing interference anticipated on the channel 47 allotment and thus provide a better service to the population served. As stated in the NPRM, the change to channel 38 is acceptable under the 2 percent criterion for de minimis.

A map showing the coverage contours for the proposed transmission facility is shown in the attached Exhibit E-1b. The accompanying background material and calculations follow it in Exhibits E-1c – h.

The environmental impact of the proposed facility was studied and evaluated to be in compliance with the Commission's requirements for minor impact. The environmental stated is included in Exhibit E-2 with background materials and calculations following in Exhibits E-2a – c.

CONCLUSION

It is respectfully requested that the Commission grant the request to Modify the CP for Main Facility as stated herein and in the accompanying Form 340.



MARSAND, INC.

Matthew A. Sanderford, Jr., P.E.

DECLARATION

Matthew A. Sanderford, Jr., P.E., declares and states that he is a graduate Electrical Engineer with a Bachelor of Science Degree in Electrical Engineering from the University of Texas at El Paso, a Licensed Professional Engineer in the State of Texas, and his qualifications are known to the Federal Communications Commission, and that he is President of MARSAND, INC., a Registered Professional Engineering firm in the State of Texas, and that firm has been retained by Central Texas College (CTC), to perform the engineering support as contained in this report.

All facts contained herein are true of his own knowledge except where stated to be on information or belief provided by CTC, and as to those facts, he believes them to be true.

I declare under penalty of perjury that the foregoing is true and correct.



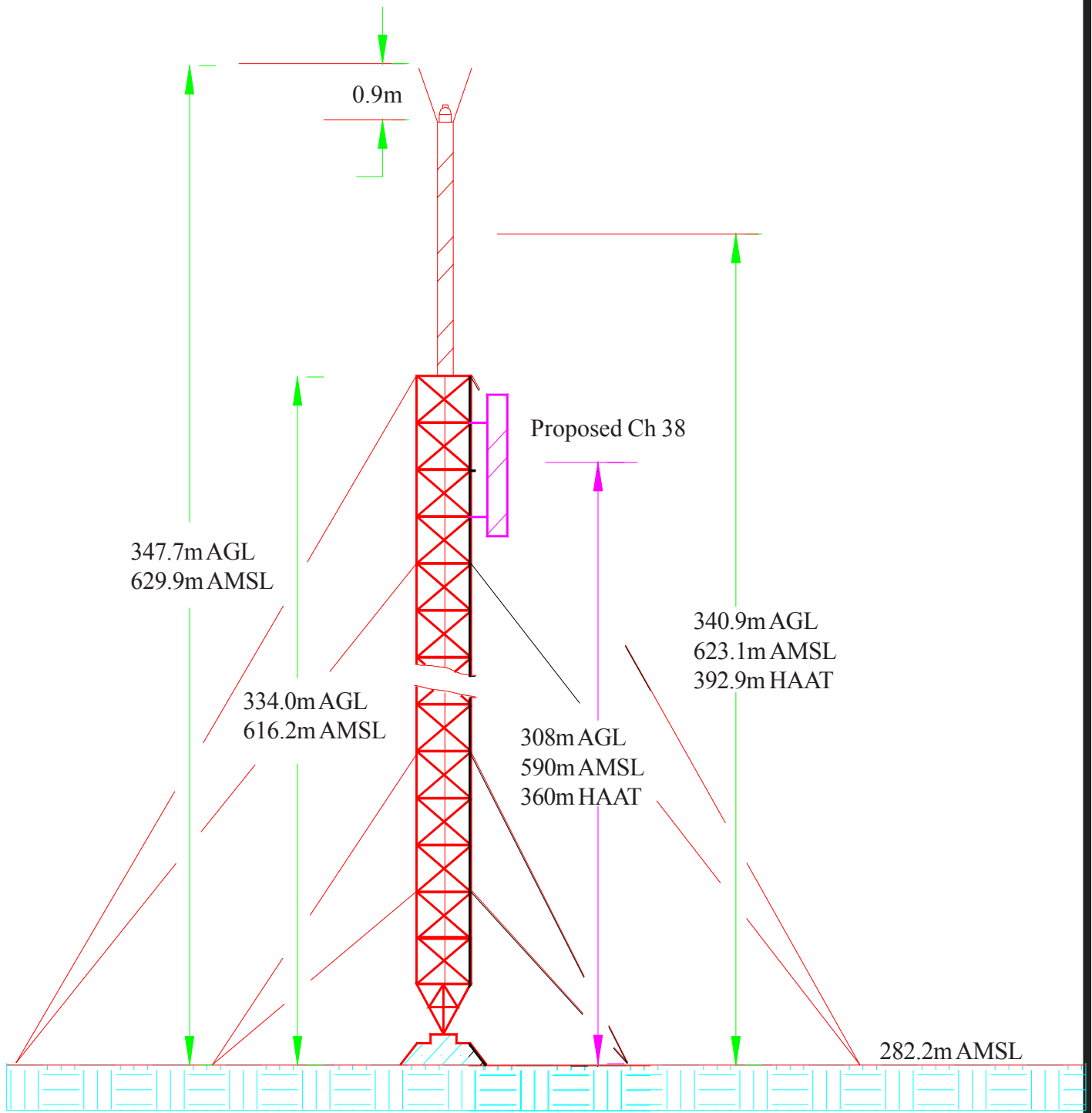
Matthew A. Sanderford, Jr., P.E.

President - MARSAND, INC.

Executed this 12th day of March, 2003

State of Texas

E-1a



NOTE: Not Drawn to Scale

North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Antenna Location on Tower

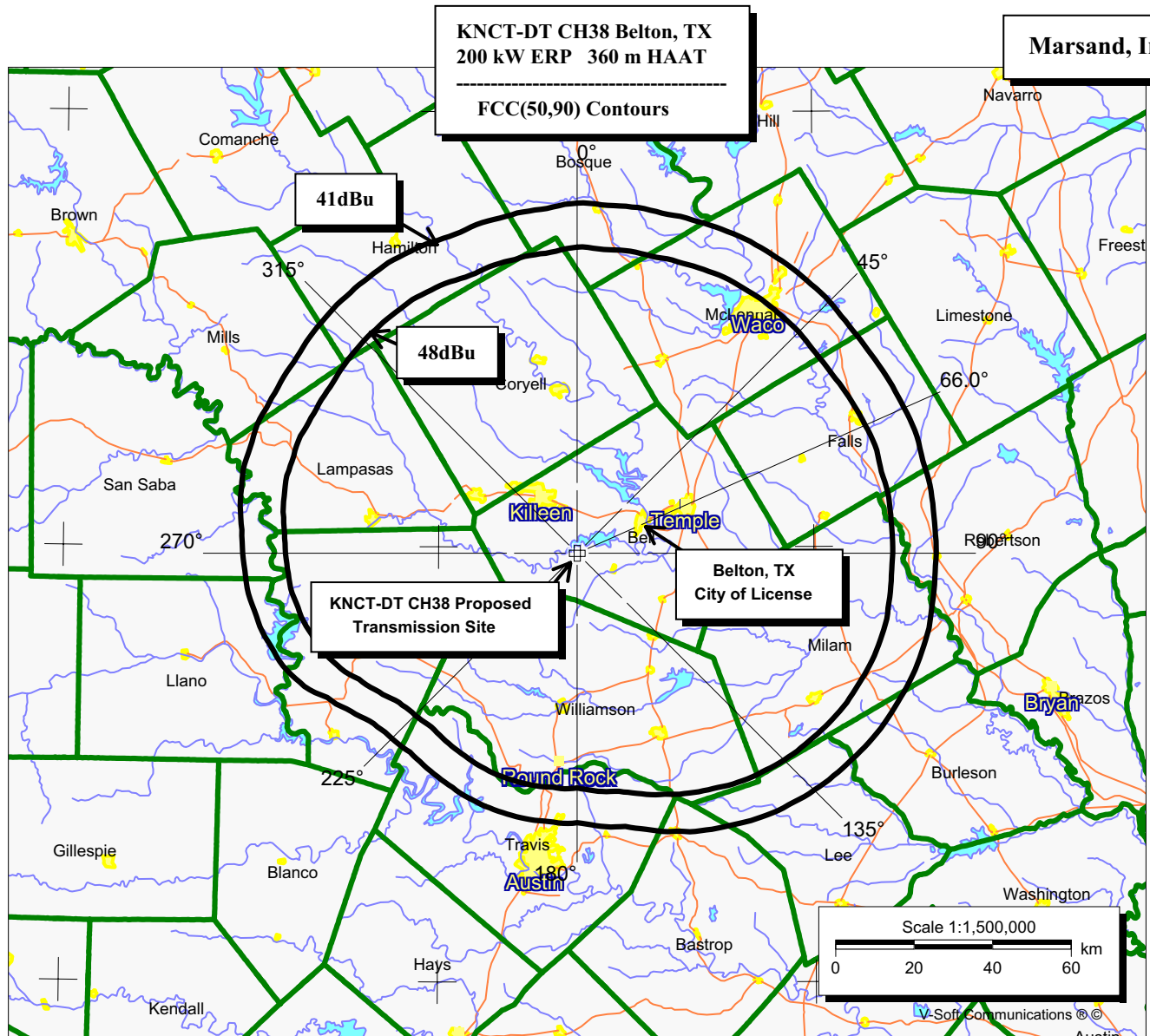
Central Texas College

KNCT-DT CH38 Application for Modification to CP
HAAT 360 m ERP 200.0 kW

MARSAND, INC.

Professional Engineering Consultants
P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

E-1b



North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Proposed Coverage

Central Texas College

KNCT-DT CH38 Application for Modification to CP
HAAT 360 m ERP 200.0 kW

MARSAND, INC.

Professional Engineering Consultants
P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

E-1c

EFFECTIVE RADIATED POWER PATTERN CALCULATIONS

Date: 3/12/2003 Site Elevation: 925.85 ft. 282.20 m
 Call Letters: KNCT Average Terrain: 754.31 ft. 229.91 m
 City/State: Belton, TX Antenna RC AG: 1010.50 ft. 308.00 m
 Channel: 38DTV Antenna RCAMSL: 1936.35 ft. 590.20 m
 Frequency: 617 MHz Mid-Band Antenna HAAT: 1182.05 ft. 360.29 m
 Latitude: N 30° 59' 08" Maximum ERP - Vert. Pol.: kW dBk
 Longitude: W 97° 37' 51" Hor. Pol.: 199.91 kW 23.01 dBk
 Antenna: Andrew ATW30H4-HSCX-38 Radio Horizon ERP - Vert. Pol.: kW dBk
 Hor. Pol.: 199.91 kW 23.01 dBk

Radial Azimuth (degrees)	Azimuthal Relative Field (V)	Radial Elevation (m)	Antenna HAAT (m)	Angle to Radio Horizon (degrees)	Radio Horizon ERP				Maximum ERP				DTV Contour 41 dBu (km)
					Hor. Polarization		Vert. Polarization		Hor. Polarization		Vert. Polarization		
					(dBk)	(kW)	(dBk)	(kW)	(dBk)	(kW)	(dBk)	(kW)	
*0	0.970	227.3	362.9	0.5	22.74	188.10			22.74	188.10			89.2
10	0.990	229.0	361.2	0.5	22.92	195.94			22.92	195.94			89.4
20	1.000	225.0	365.2	0.5	23.01	199.91			23.01	199.91			89.9
30	0.990	210.0	380.2	0.5	22.92	195.94			22.92	195.94			90.8
40	0.970	204.4	385.8	0.5	22.74	188.10			22.74	188.10			90.8
*45	0.955	202.1	388.1	0.5	22.61	182.33			22.61	182.33			90.8
50	0.940	205.8	384.4	0.5	22.47	176.64			22.47	176.64			90.3
60	0.920	194.4	395.8	0.6	22.28	169.21			22.28	169.21			90.7
70	0.930	182.4	407.8	0.6	22.38	172.91			22.38	172.91			91.5
80	0.970	193.5	396.7	0.6	22.74	188.10			22.74	188.10			91.5
*90	0.990	200.6	389.6	0.5	22.92	195.94			22.92	195.94			91.4
100	0.990	200.3	389.9	0.5	22.92	195.94			22.92	195.94			91.4
110	0.960	201.3	388.9	0.5	22.65	184.24			22.65	184.24			90.8
120	0.880	208.3	381.9	0.5	21.90	154.81			21.90	154.81			89.2
130	0.770	216.9	373.3	0.5	20.74	118.53			20.74	118.53			86.7
*135	0.705	218.1	372.1	0.5	19.97	99.36			19.97	99.36			85.3
140	0.640	221.8	368.4	0.5	19.13	81.89			19.13	81.89			83.7
150	0.500	229.3	360.9	0.5	16.99	49.98			16.99	49.98			79.8
160	0.350	225.0	365.2	0.5	13.89	24.49			13.89	24.49			75.3
170	0.250	228.0	362.2	0.5	10.97	12.49			10.97	12.49			70.7
*180	0.220	235.3	354.9	0.5	9.86	9.68			9.86	9.68			68.6
190	0.240	246.6	343.6	0.5	10.61	11.52			10.61	11.52			68.9
200	0.250	259.0	331.2	0.5	10.97	12.49			10.97	12.49			68.6
210	0.240	271.3	318.9	0.5	10.61	11.52			10.61	11.52			67.3
220	0.220	275.5	314.7	0.5	9.86	9.68			9.86	9.68			66.1
*225	0.238	277.9	312.3	0.5	10.54	11.32			10.54	11.32			66.7
230	0.250	274.6	315.6	0.5	10.97	12.49			10.97	12.49			67.5
240	0.350	246.9	343.3	0.5	13.89	24.49			13.89	24.49			73.5
250	0.500	219.5	370.7	0.5	16.99	49.98			16.99	49.98			80.6
260	0.640	224.7	365.5	0.5	19.13	81.89			19.13	81.89			83.4
*270	0.770	234.7	355.5	0.5	20.74	118.53			20.74	118.53			85.2
280	0.880	236.6	353.6	0.5	21.90	154.81			21.90	154.81			86.9
290	0.960	242.8	347.4	0.5	22.65	184.24			22.65	184.24			87.6
300	0.990	252.7	337.5	0.5	22.92	195.94			22.92	195.94			87.2
310	0.990	248.1	342.1	0.5	22.92	195.94			22.92	195.94			87.6
*315	0.980	243.3	346.9	0.5	22.83	192.00			22.83	192.00			88.0
320	0.970	240.2	350.0	0.5	22.74	188.10			22.74	188.10			88.1
330	0.930	235.0	355.2	0.5	22.38	172.91			22.38	172.91			88.0
340	0.920	242.9	347.3	0.5	22.28	169.21			22.28	169.21			87.0
350	0.940	235.6	354.6	0.5	22.47	176.64			22.47	176.64			88.0
Radial through City of License -													
66	0.926	188.1	402.1	0.4	22.34	171.42			22.34	171.42			91.1
Maximum Radials: 20 Minimum Radials:													
* Denote radials used in averaging													

North Latitude 30° 59' 08"
 West Longitude 97° 37' 51"

ERP Pattern Calculations

Central Texas College

KNCT-DT CH38 Application for Modification to CP
 HAAT 360 m ERP 200.0 kW

MARSAND, INC.

Professional Engineering Consultants
 P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

E-1d

EFFECTIVE RADIATED POWER CALCULATIONS

Call letters: **KNCT** Date: **3/12/2003**
Location: **Belton, TX**
Channel: **38DTV**
Frequency: **617 MHz Mid-Band**
Antenna: **Andrew ATW30H4-HSCX-38**

Transmitter Output Power: **9.01 kW avg. 9.55 dBk**
Filter Type: **(included)** Filter Loss: **dB**
Transmission Line: **Andrew HJ11-50 4" Air Helix**
Loss per 100 ft.: **-0.322 dB**
Line Length: **1040 ft.**

Total Line Loss: **-3.349 dB -3.35 dB**

Antenna Input Power: **4.17 kW 6.20 dBk**

Efficiency: **46.251 %**

Elevation Antenna Gain -

Radio Horizon -

<i>Vert. Polarization</i>	<i>Gain</i>	<i>dB</i>
<i>Hor. Polarization</i>	29.99 Gain	14.77 dB

Maximum -

<i>Vert. Polarization</i>	<i>Gain</i>	<i>dB</i>
<i>Hor. Polarization</i>	29.99 Gain	14.77 dB

Azimuthal Antenna Gain -

<i>Vert. Polarization</i>	<i>Gain</i>	<i>dB</i>
<i>Hor. Polarization</i>	1.60 Gain	2.04 dB

Radio Horizon ERP -

<i>Vertical Polarization:</i>	<i>kW</i>	<i>dBk</i>
<i>Horizontal Polarization:</i>	199.91 kW	23.01 dBk

Maximum ERP -

<i>Vertical Polarization:</i>	<i>kW</i>	<i>dBk</i>
<i>Horizontal Polarization:</i>	199.91 kW	23.01 dBk

Peak Power: **795.87 kW 29.01 dBk**

North Latitude **30° 59' 08"**
West Longitude **97° 37' 51"**

ERP Calculations

Central Texas College

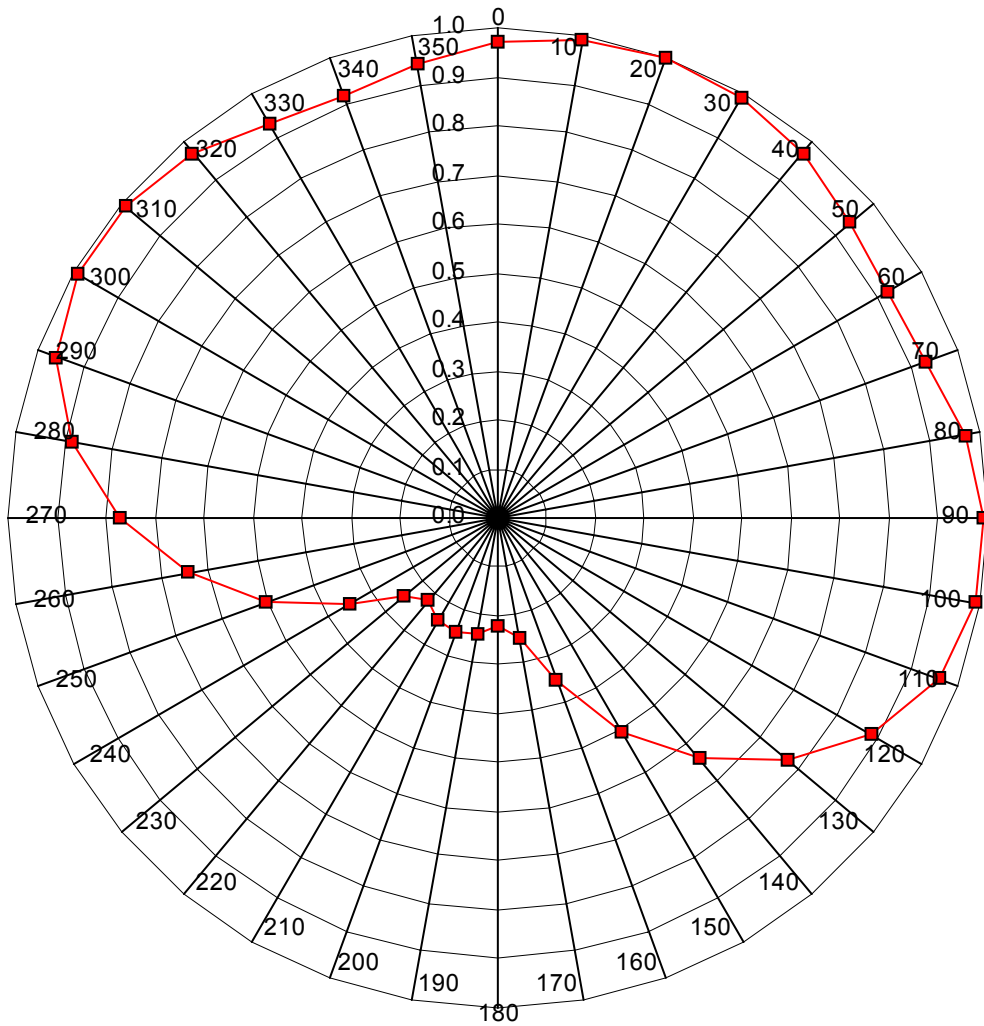
MARSAND, INC.

KNCT-DT CH38 Application for Modification to CP
HAAT **360 m** ERP **200.0 kW**

Professional Engineering Consultants
P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

E-1e

Relative Field Pattern



North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Relative Field Pattern

Central Texas College

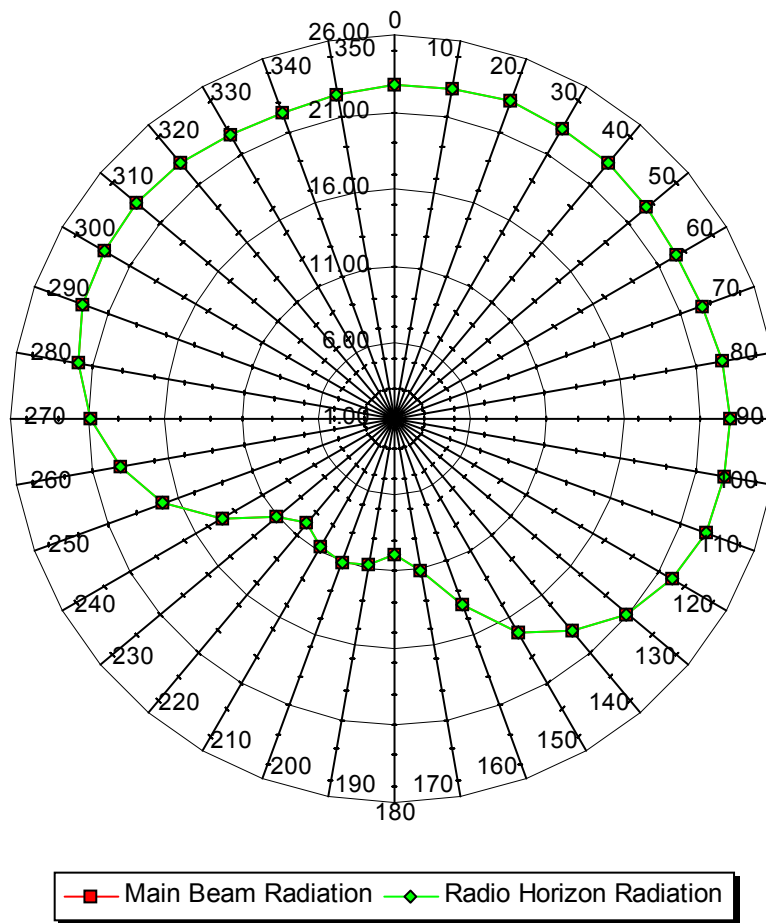
MARSAND, INC.

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HAAT 360 m ERP 200.0 kW

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P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

E-1f

**Radiation Power Polar Plot
(dBk)**



North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Radiation Power Polar Plot

Central Texas College

KNCT-DT CH38 Application for Modification to CP
HAAT 360 m ERP 200.0 kW

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E-1g

ANDREW
AZIMUTH PATTERN

Type: CH38AZ-H-BID-CX

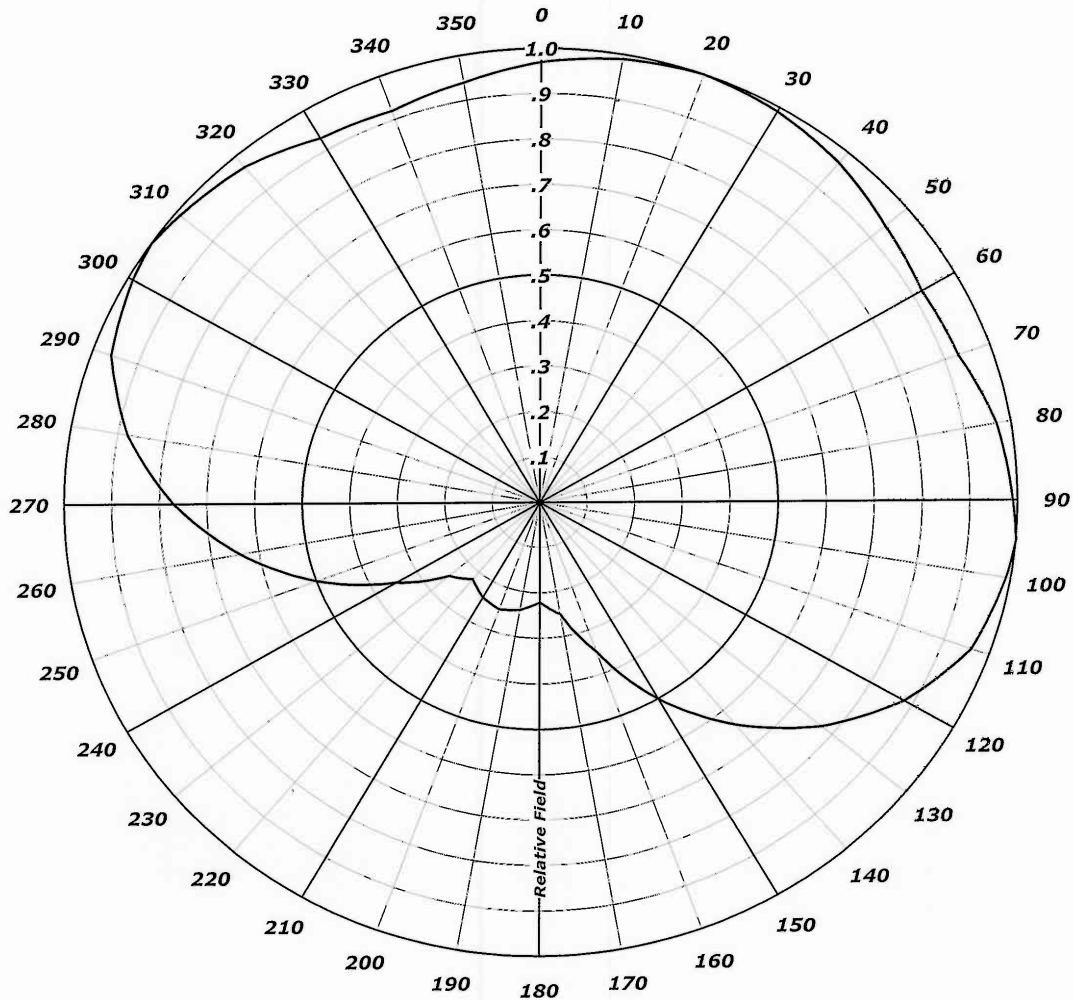
Directivity: Numeric 1.60 dBd (2.07)

Peak(s) At:

Polarization: Horizontal

Channel: 38 (Digital)

Location: Belton, TX



ANDREW CORPORATION
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60462

KO101402-1192 -6-

North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Mfg. Antenna Azimuthal Pattern

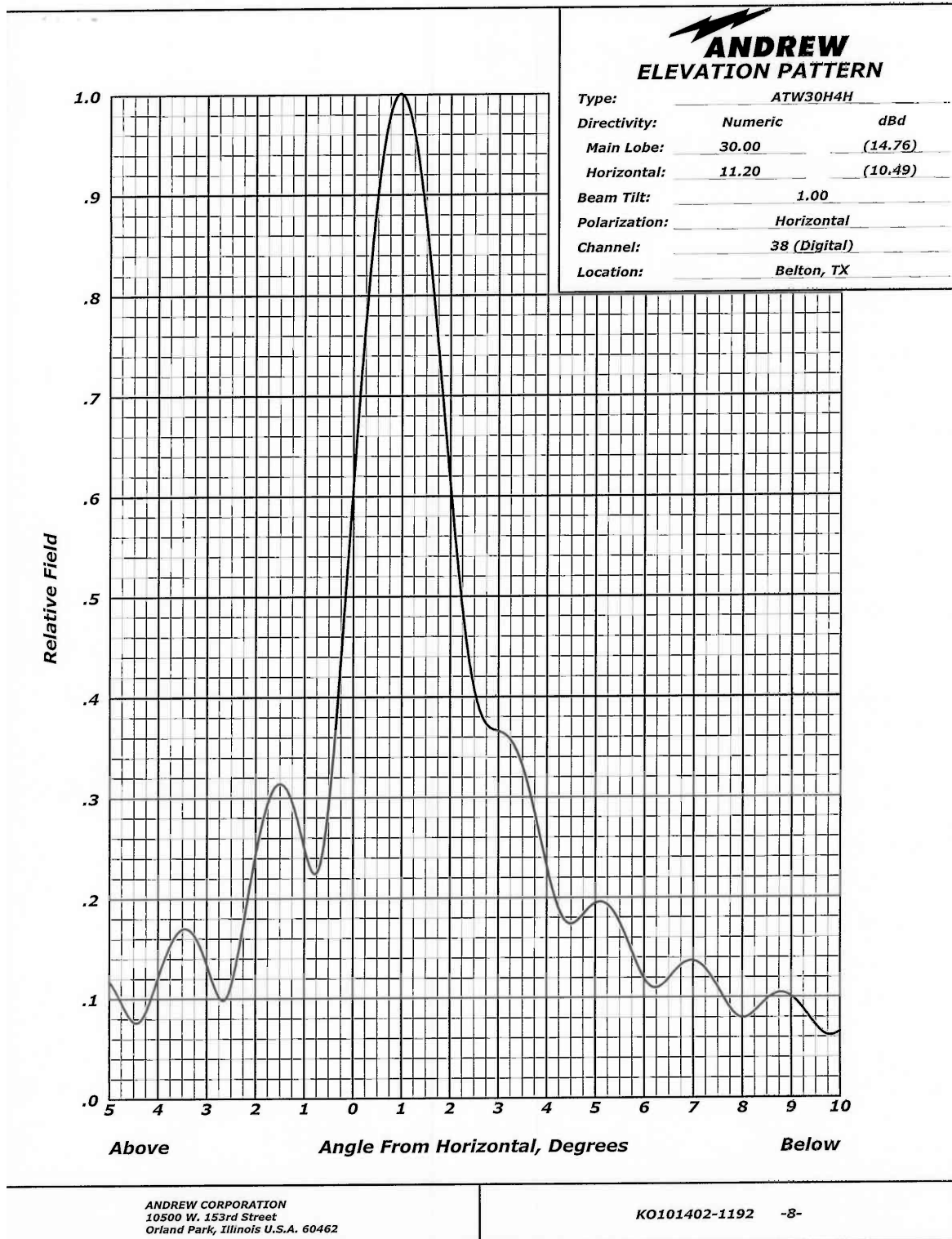
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E-1h



North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Mfg. Antenna Elevation Pattern

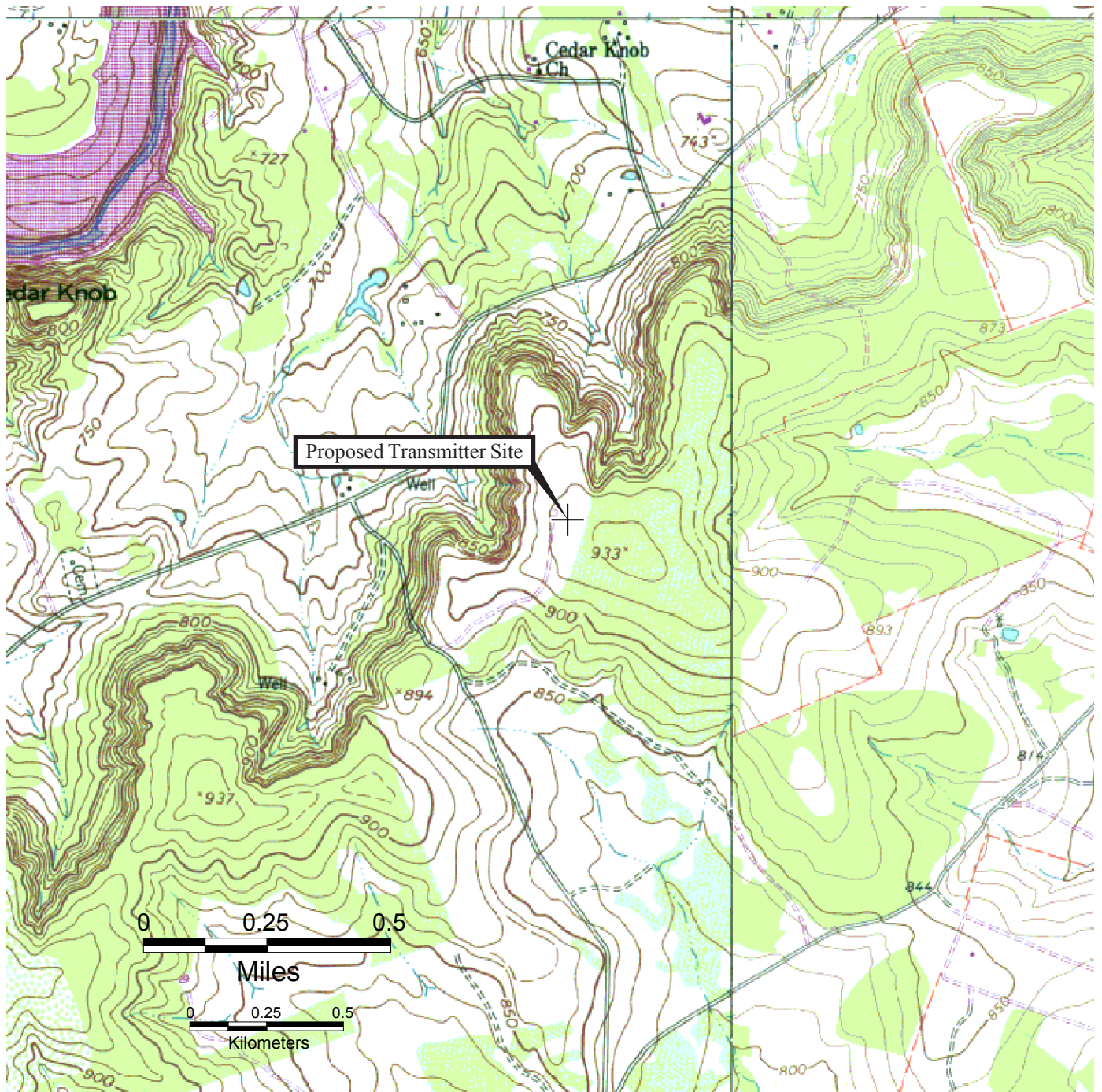
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HAAT 360 m ERP 200.0 kW

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E-1i



North Latitude 30° 59' 08"
West Longitude 97° 37' 51"

Proposed Transmitter Site

Central Texas College

KNCT-DT CH38 Application for Modification to CP
HAAT 360 m ERP 200.0 kW

MARSAND, INC.

Professional Engineering Consultants
P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

ENVIRONMENTAL STATEMENT

The proposed facility complies in full with the requirements of FCC RR Section 1.1307 and will have no significant environmental impact. Population is very scattered and sparse near the immediate location of the proposed site. The proposed site does not involve any of the conditions specified in Section 1.1307(a)(1)-(6) of the Rules.

The proposed change in the facility has been studied in accordance with the procedures set forth in the FCC OET Bulletin No. 65 "Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 97-01, and has been found to be in full compliance. This determination has been based upon calculations with the total radiated power from all TV & FM co-located broadcast emitters. The total exposure as defined by the ANSI standard computations for occupational/controlled area is **0.21 %** of the maximum. The total exposure as defined by the ANSI standard computations for general population/uncontrolled area is **1.05 %** of the maximum. The proposed facility is in compliance with the Commission's guidelines.

The Applicant agrees to maintain full compliance with the safety precautions to workers on the tower (controlled) and the general public (uncontrolled) by reducing or removing radiated power during the time of construction or maintenance on or near the antenna. The Applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from Radiofrequency Electromagnetic exposure in excess of FCC guidelines

This application would be considered a minor change, with no impact to the surrounding terrain, wildlife, or human environment.

The Applicant is believed to be in full compliance with the Environmental Impact and Commission Rules.

Multiple Use FM/TV Tower

Location: **KNCT, Belton, TX** 3/13/03

Licensee Call Sign	Service	ERP (Watts)	Ant Center of Radiation AG (m)	% of ANSI/FCC Limit (6min)	% of ANSI/FCC Limit (30 min)
46NTSC	TV UHF#1	632,500	340.90	0.04	0.19
38DTV	TV UHF#2	200,000	308.00	0.03	0.17
91.3 MHz	FM #1	100,000	356.60	0.11	0.53
105.5 MHz	FM #2	68,000	131.00	0.03	0.17
Total %				0.21	1.05

IN COMPLIANCE

North Latitude **30° 59' 08"**
West Longitude **97° 37' 51"**

RFR Statement

Central Texas College

KNCT-DT CH38 Application for Modification to CP
HAAT 360 m ERP 200.0 kW

MARSAND, INC.

Professional Engineering Consultants
P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

RF RADIATION TO HUMAN EXPOSURE CALCULATIONSCall letters: **KNCT**

Date:

3/10/03Location: **Belton, TX****(UHF 300-1500 MHz)**Channel: **46NTSC****ANSI/IEEE C95.1-1992 & FCC OST/OET Bulletin Number 65**

Peak Visual ERP:

575,000 W

Aural ERP:

57,500 W

DTV Average Pwr

0 W**Worst Case** downward radiation:**0.200****Typical relative field factor** in the downward direction:**0.100**

(from -60 to -90 degrees elevation)

Distance from ground to antenna center of radiation:

340.90 m**A. Occupational/Controlled Exposure**

	Actual	Worst Case
Highest power density:	0.8265 $\mu\text{W}/\text{cm}^2$	3.3061 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0008 mW/cm^2	0.0033 mW/cm^2

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:

663.25 MHz

Required minimum ANSI standard

2.2108 mW/cm^2

6 minutes Avg.

Percentage of ANSI requirement:

0.04 %

0.15 %

B. General Population/Uncontrolled Exposure

		Head Height
Dist. of Person from ant/twr vert Plumb:	20 m	20 m
Dist. of Person from ant/twr Direct:	340.9 m	
	Actual	Worst Case
Highest power density:	0.8265 $\mu\text{W}/\text{cm}^2$	3.3061 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0008 mW/cm^2	0.0033 mW/cm^2

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:

663.25 MHz

Required minimum ANSI standard

0.4422 mW/cm^2

30 minutes Avg.

Percentage of ANSI requirement:

0.19 %

0.75 %

North Latitude **30° 59' 08"**West Longitude **97° 37' 51"****RFR Calculations NTSC Ch 46****Central Texas College****MARSAND, INC.**

KNCT-DT CH38 Application for Modification to CP

Professional Engineering Consultants**HAAT 360 m ERP 200.0 kW**

P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

RF RADIATION TO HUMAN EXPOSURE CALCULATIONSCall letters: **KNCT-DT**Date: **3/10/03**Location: **Belton, TX****(UHF 300-1500 MHz)**Channel: **38DTV****ANSI/IEEE C95.1-1992 & FCC OST/OET Bulletin Number 65**

Peak Visual ERP:

0 W

Aural ERP:

0 W

DTV Average Pwr

200,000 W**Worst Case** downward radiation:**0.200****Typical relative field factor** in the downward direction:**0.100**

(from -60 to -90 degrees elevation)

Distance from ground to antenna center of radiation:

308.00 m**A. Occupational/Controlled Exposure**

	Actual	Worst Case
Highest power density:	0.7044 $\mu\text{W}/\text{cm}^2$	2.8175 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0007 mW/cm²	0.0028 mW/cm ²

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:	620 MHz	
Required minimum ANSI standard	2.0667 mW/cm²	6 minutes Avg.
Percentage of ANSI requirement:	0.03 %	0.14 %

B. General Population/Uncontrolled Exposure

		Head Height
Dist. of Person from ant/twr vert Plumb:	20 m	20 m
Dist. of Person from ant/twr Direct:	308.0 m	
	Actual	Worst Case
Highest power density:	0.7044 $\mu\text{W}/\text{cm}^2$	2.8175 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0007 mW/cm²	0.0028 mW/cm ²

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:	620 MHz	
Required minimum ANSI standard	0.4133 mW/cm²	30 minutes Avg.
Percentage of ANSI requirement:	0.17 %	0.68 %

North Latitude **30° 59' 08"**West Longitude **97° 37' 51"****RFR Calculations DTV Channel****Central Texas College**

KNCT-DT CH38 Application for Modification to CP

HAAT 360 m ERP 200.0 kW**MARSAND, INC.****Professional Engineering Consultants**

P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

RF RADIATION TO HUMAN EXPOSURE CALCULATIONS FM #1Call letters: **KNCT-FM**Date: **3/10/03**Location: **Killeen, TX** **(FM 30-300 MHz)**Channel: **91.3 MHz****ANSI/IEEE C95.1-1992 & FCC OST/OET Bulletin Number 65**Aural ERP: Horizontal **50,000 W**Aural ERP: Vertical **50,000 W****Worst Case** downward radiation: **0.300****Typical relative field factor** in the downward direction: **0.200**

(from -60 to -90 degrees elevation)

Distance from ground to antenna center of radiation: **356.60 m****A. Occupational/Controlled Exposure**

	Actual	Worst Case
Highest power density:	1.0509 $\mu\text{W}/\text{cm}^2$	2.3646 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0011 mW/cm^2	0.0024 mW/cm^2

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:	91.3 MHz	
Required minimum ANSI standard:	1.0 mW/cm^2	6 minutes Avg.
Percentage of ANSI requirement:	0.11 %	0.24 %

B. General Population/Uncontrolled Exposure

	Actual	Worst Case
Dist. of Person from ant/twr vert Plumb:	20 m	20 m
Dist. of Person from ant/twr Direct:	356.6 m	
Highest power density:	1.0509 $\mu\text{W}/\text{cm}^2$	2.3646 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0011 mW/cm^2	0.0024 mW/cm^2

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:	91.3 MHz	
Required minimum ANSI standard:	0.2 mW/cm^2	30 minutes Avg.
Percentage of ANSI requirement:	0.53 %	1.18 %

North Latitude **30° 59' 08"**West Longitude **97° 37' 51"****RFR Calculations FM 91.3 MHz****Central Texas College****MARSAND, INC.**

KNCT-DT CH38 Application for Modification to CP

Professional Engineering Consultants**HAAT 360 m ERP 200.0 kW**

P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

RF RADIATION TO HUMAN EXPOSURE CALCULATIONS FM #2Call letters: **KYUL-FM**Date: **3/10/03**Location: **Harker Heights, TX (FM 30-300 MHz)**Channel: **105.5 MHz****ANSI/IEEE C95.1-1992 & FCC OST/OET Bulletin Number 65**Aural ERP: Horizontal **34,000 W**Aural ERP: Vertical **34,000 W****Worst Case** downward radiation: **0.100****Typical relative field factor** in the downward direction:
(from -60 to -90 degrees elevation) **0.050**Distance from ground to antenna center of radiation: **131.00 m****A. Occupational/Controlled Exposure**

	Actual	Worst Case
Highest power density:	0.3310 $\mu\text{W}/\text{cm}^2$	1.3239 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0003 mW/cm^2	0.0013 mW/cm^2

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:	105.5 MHz	
Required minimum ANSI standard:	1.0 mW/cm^2	6 minutes Avg.
Percentage of ANSI requirement:	0.03 %	0.13 %

B. General Population/Uncontrolled Exposure

		Head Height
Dist. of Person from ant/twr vert Plumb:	20 m	20 m
Dist. of Person from ant/twr Direct:	131.0 m	

	Actual	Worst Case
Highest power density:	0.3310 $\mu\text{W}/\text{cm}^2$	1.3239 $\mu\text{W}/\text{cm}^2$
Power Density at ground level:	0.0003 mW/cm^2	0.0013 mW/cm^2

ANSI Maximum Radiation Limit for this Channel -

Frequency of Visual Carrier:	105.5 MHz	
Required minimum ANSI standard:	0.2 mW/cm^2	30 minutes Avg.
Percentage of ANSI requirement:	0.17 %	0.66 %

North Latitude **30° 59' 08"**
 West Longitude **97° 37' 51"**

RFR Calculations FM 105.5 MHz**Central Texas College**

KNCT-DT CH38 Application for Modification to CP
HAAT 360 m ERP 200.0 kW

MARSAND, INC.

Professional Engineering Consultants
 P.O. Box 485 * 6100 IH-35W * Alvarado, TX 76009

Appendix B



ENGINEERING STATEMENT

In support of a Petition for Rulemaking for

Central Texas College

KNCT-DT Belton, TX

PURPOSE

MARSAND, INC. has been retained by Central Texas College (CTC), KNCT-DT Belton, TX, to prepare this engineering statement in support of a Petition for Rulemaking. The Federal Communications Commission (FCC) allotted Channel 47 with and Effective Radiated Power (ERP) of 50kW as the paired digital television (DTV) channel for KNCT analog channel 46. It is proposed herein to substitute a DTV channel 38 with an ERP of 200kW for KNCT-DT.

HISTORY

The digital channel 47 allotment, assigned by the Federal Communications Commission (Commission), Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders on Advanced Television, specified an Effective Radiated Power (ERP) of 50 kW. An application was made to raise this ERP to 200 kW and was granted Construction Permit (CP) BPEDT-20000420AAD.

DISCUSSION

An engineering interference study was performed under the guidelines of OET 69 for DTV channel 38 at the height and location used in the CP granted above and specified in the technical data below. A directional horizontal antenna pattern was used and is shown in **Figure 1**. The proposed F(50,90) 48dBu coverage contour would encompass the principle community, Belton, TX, entirely as shown in **Figure 2**.

The results of the study are included in **Table 1** below. A more detailed analysis was performed in determining interference to KXAN analog CH36 in Austin, TX. Again, the guidelines of OET 69 were followed with the addition of taking terrain data at the interval of

0.1km instead of 1km in order to account for the hilly terrain. The results are listed in **Table 1** under Station #4. The proposed substitution would not exceed the 2% de minimis requirement set forth in OET 69. In fact, in all but one case the predicted interference falls under 0.5%

The proposed substitution will increase the population and area served. Using the Longley-Rice method of signal level prediction and data from the 2000 Census, the following table of population and areas served was generated:

	Population (persons)	Area (km ²)
CH47 Baseline:		
Noise Limited	611,147	15,546.4
Terrain Limited	610,722	15,417.2
IX Free	610,722	15,417.2
CH38 Substitution:		
Noise Limited	828,942	23,305.9
Terrain Limited	823,398	22,721.0
IX Free	740,357	21,853.8

CONCLUSION

It is respectfully requested that the Commission grant the proposed substitute DTV channel 38 in place of the allotted DTV channel 47.

The proposed technical data is shown below.

SUMMARY OF TECHNICAL DATA

DTV Channel	38	(Paired to KNCT analog channel 46)
Maximum ERP	200 kW	(Directional)
Antenna Height	623.1 m AMSL	(392.9 m HAAT)
Coordinates	30° 59' 08"	North Latitude
(NAD-27)	97° 37' 51"	West Longitude

DECLARATION

Matthew A. Sanderford, Jr., P.E., declares and states that he is a graduate Electrical Engineer with a Bachelor of Science Degree in Electrical Engineering from the University of Texas at El Paso, a Licensed Professional Engineer in the State of Texas, and his qualifications are known to the Federal Communications Commission, and that he is President of MARSAND, INC., a Registered Professional Engineering firm in the State of Texas, and that firm has been retained by Central Texas College (CTC), to perform the engineering support as contained in this report.

All facts contained herein are true of his own knowledge except where stated to be on information or belief provided by CTC, and as to those facts, he believes them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Matthew A. Sanderford, Jr., P.E.
President - MARSAND, INC.

Executed this 19th day of April, 2002
State of Texas



MARSAND, INC.

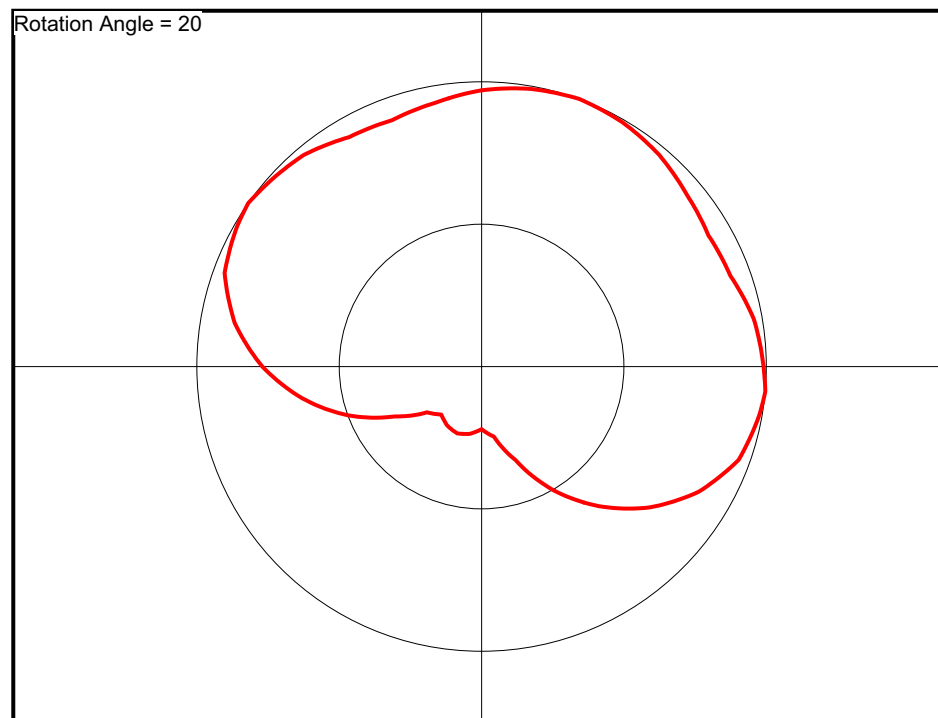
Matthew A. Sanderford, Jr., P.E.

Figure 1

Antenna Pattern

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Effective Field
0.0	1.000
10.0	0.990
20.0	0.970
30.0	0.940
40.0	0.920
50.0	0.930
60.0	0.970
70.0	0.990
75.0	1.000
80.0	0.990
90.0	0.960
100.0	0.880
110.0	0.770
120.0	0.640
130.0	0.500
140.0	0.350
150.0	0.250
160.0	0.220
170.0	0.240
180.0	0.250
190.0	0.240
200.0	0.220
210.0	0.250
220.0	0.350
230.0	0.500
240.0	0.640
250.0	0.770
260.0	0.880
270.0	0.960
280.0	0.990
285.0	1.000
290.0	0.990
300.0	0.970
310.0	0.930
320.0	0.920
330.0	0.940
340.0	0.970
350.0	0.990



Note:
Tabulated data to the left is "Pre-Rotation". Actual pattern used is rotated 20 degrees true as shown above.

Figure 2

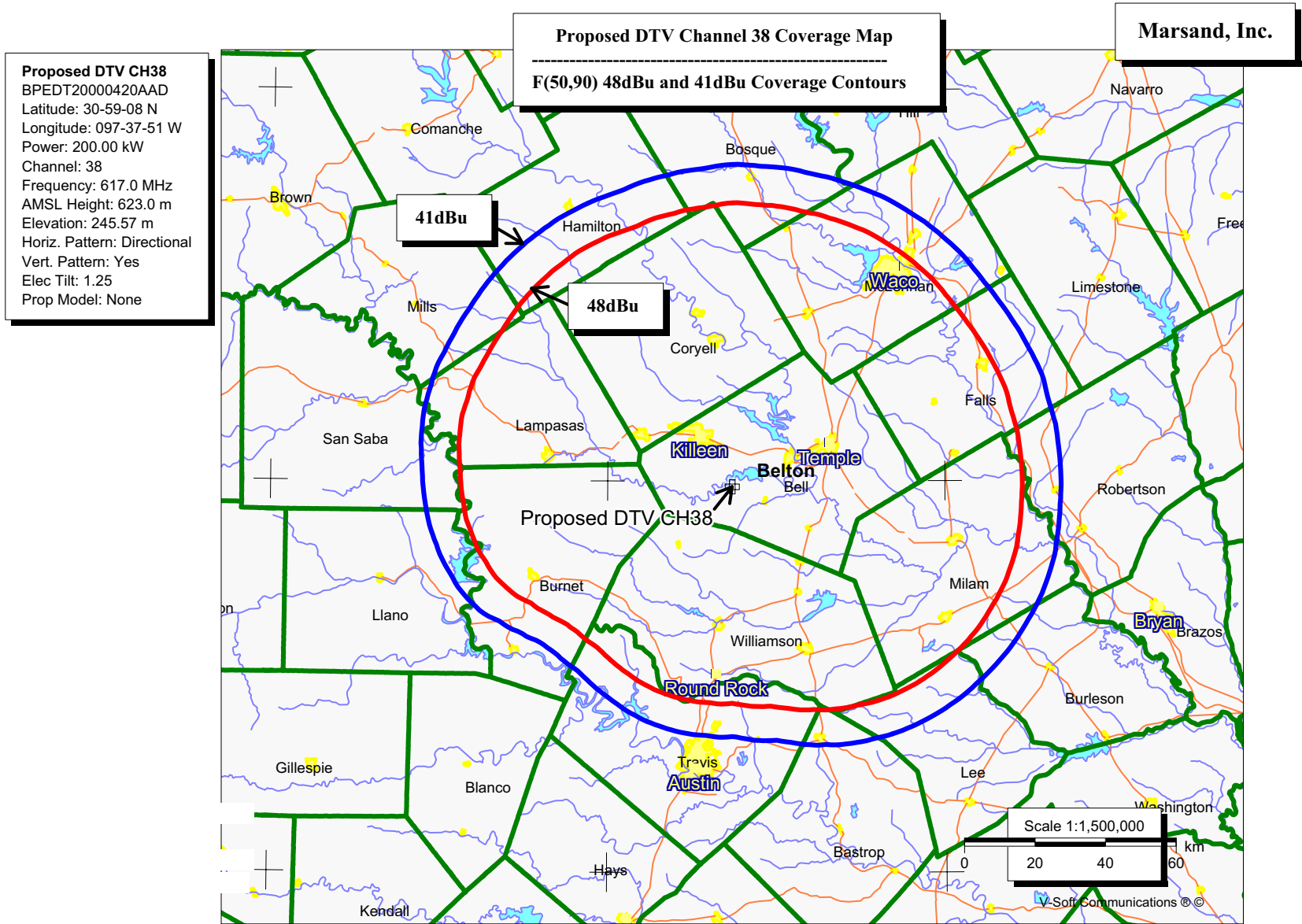


Table 1

KNCT-DT CH38 200kW RFS A												
Station #	Channel	Call Letters	City	Stat	Distance (k)	Status	Baseline Population	Initial	Initial	New Interference	New	
								Interference	Interference			Interference
								Population	Percentage	Population	Percentage	
1	24	KVUE-TV	AUSTIN	TX	75.5	LIC	BLCT -2113	99581	33434	33.57%	0	0.00%
2	34	KCTF	WACO	TX	46.2	CP	BPET -19990216KF	201413	155	0.08%	986	0.49%
3	34	KCTF	WACO	TX	72.9	LIC	BLET -19890531KE	No Predicted IX				
*4	36	KXAN-TV	AUSTIN	TX	75.1	LIC	BLCT -19971202KF	1106237	70127	6.34%	6171	0.56%
5	38	960111LP	CORPUS CHRISTI	TX	398.9	APP	BPCT -19960111LP	N/A - Beyond Evaluation Distance				
6	38	960920ID	CORPUS CHRISTI	TX	355.1	APP	BPCT -19960920ID	No Predicted IX				
7	38	960920IF	CORPUS CHRISTI	TX	384.3	APP	BPCT -19960920IF	N/A - Beyond Evaluation Distance				
8	38	960920LM	CORPUS CHRISTI	TX	370.4	APP	BPCT -19960920LM	No Predicted IX				
9	38	960920YW	CORPUS CHRISTI	TX	364.3	APP	BPCT -19960920YW	No Predicted IX				
10	38	960920YH	CORPUS CHRISTI	TX	359.8	APP	BPCT -19960920YH	N/A - Beyond Evaluation Distance				
11	38	960920IH	CORPUS CHRISTI	TX	370.2	APP	BPCT -19960920IH	N/A - Beyond Evaluation Distance				
12	38	960206KH	CORPUS CHRISTI	TX	355.5	APP	BPCT -19960206KH	No Predicted IX				
13	38	KHWB	HOUSTON	TX	258.2	CP MOD	BMPCDT -20000425AAY	3779622	670	0.02%	432	0.01%
14	38	KVDA	SAN ANTONIO	TX	197.4	APP	BPCDT -19991028ACQ	1468597	26	0.00%	6772	0.46%
15	38	KVDA-DT	SAN ANTONIO	TX	197.4	PLN	DTVPLN -DTVP1014	1468597	220	0.01%	68	0.00%
16	38	KLTV-DT	TYLER	TX	285.8	PLN	DTVPLN -DTVP1015	705245	392	0.06%	390	0.06%
17	39	KXTX-TV	DALLAS	TX	188.5	LIC	BLCT -19970905KE	No Predicted IX				
18	39	KWEX-DT	SAN ANTONIO	TX	197.5	CP	BPCDT -19991022ABT	No Predicted IX				
19	39	KWEX-DT	SAN ANTONIO	TX	197.4	PLN	DTVPLN -DTVP1049	No Predicted IX				
20	39	KWEX-DT	SAN ANTONIO	TX	197.5	APP	BMPCDT -20010619AAE	No Predicted IX				
21	42	KEYE-TV	AUSTIN	TX	75.8	LIC	BLCT -19831216KH	No Predicted IX				
22	42	KEYE-TV	AUSTIN	TX	75.8	CP	BPCT -19961211KG	No Predicted IX				
23	46	KNCT	BELTON	TX	0.2	LIC	BLCT -2369	No Predicted IX				

Notes: *4 - The interference study for station #4 was run using 2km/side cells and 0.1km terrain extraction.