

## **ENGINEERING EXHIBIT**

### **Amendment to Application for Construction Permit BPH-19971016MJ**

prepared for

#### **Ramar Communications, Inc.**

New (FM) Idalou, TX

Facility ID 88795

Ch. 299C3 (107.7 MHz) 10.5 kW 154 m

*Ramar Communications, Inc.* (“*Ramar*”) is the FCC Auction Number 88 winning bidder for a Construction Permit for the vacant FM allotment on Channel 299A at Idalou, TX. Pursuant to FCC Public Notice,<sup>1</sup> *Ramar* herein amends its pending application (BPH-19971016MJ) to propose construction of the new FM station. *Ramar* herein proposes a “one step” increase to Class C3 and use of a different transmitter site. No change in channel or principal community is proposed.

#### **One-Step “Allotment” Reference Point**

An allocation spacing summary is provided in Table 1 for the Class C3 allotment reference point (33° 41’ 00” N-Lat 101° 41’ 30” W-Lon). The proposed allotment point is fully spaced to all authorized facilities, proposed stations, and allotments contained in the Commission’s CDBS. Figure 1 supplies a map depicting the uniform terrain city-grade contour radius from the allotment point, which totally encompasses the principal community (boundaries based on 2000 Census Tiger data).

#### **Proposed Operation**

As specified herein, the new Channel 299C3 facility will operate with an effective radiated power (“ERP”) of 10.5 kW and an antenna height above average terrain (“HAAT”) of 154 meters, with a non-directional antenna. This ERP / HAAT combination represents a maximum Class C3 facility.

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<sup>1</sup>*Closed Auction of Broadcast Construction Permits Closes; Winning Bidders Announced for Auction 88, DA 10-1360, July 29, 2010.*

The proposed Channel 299C3 antenna will be side-mounted on an existing antenna supporting structure, having FCC Antenna Structure Registration number 1248244. This tower structure is currently employed by various authorized FM radio and television facilities. No change in overall structure height is proposed.

### **Principal Community Coverage**

A coverage contour map is supplied as Figure 2, showing that the principal community of Idalou is not entirely encompassed by the 70 dB $\mu$  coverage contour when plotted per standard FCC curves as specified in §73.313(c)-(d). The principal community is encompassed by the 70 dB $\mu$  contour when determined with a supplemental method as discussed in the following.

Section 73.313(e) permits the use of a supplemental method of coverage prediction when the intervening terrain departs widely from the average. The FCC's current policy<sup>2</sup> permits use of a supplemental method in cases where "when the actual terrain roughness factor, measured along the radial running from the antenna site to the community center from a distance of 10 to 50 kilometers from the antenna site, is less than or equal to 20 meters or greater than or equal to 100 meters" ( $\Delta h$ ). For the case at hand, the  $\Delta h$  along the 44° True radial through Idalou is 19.3 meters, which does not exceed 20 meters due to the flat terrain in the vicinity of the transmitter and Idalou. Therefore the proposal qualifies under FCC policy to rely on a supplemental method.

All of Idalou is encompassed by the 70 dB $\mu$  contour based on the Point-to-Point (PTP) method<sup>3</sup> as developed by the FCC's OET. The PTP 70 dB $\mu$  contour is depicted on Figure 2 along with the 70 and 60 dB $\mu$  contours as derived from the FCC's standard F(50,50) curves. A detailed map is provided as Figure 3. The principal community is also entirely within the standard 60 dB $\mu$  protected contour. A terrain profile is depicted in Figure 4 which shows line of sight and provides sample PTP data along the 44 degree radial through Idalou. Terrain data is summarized in Table 2 for each radial through and near Idalou (40° to 50° T) showing that the PTP contour distance

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<sup>2</sup> See FCC Staff letter of August 8, 2002 regarding KMAJ-FM (BPH-20000316ACF, Topeka, KS). Also see "Policies to Promote Rural Radio Service and to Streamline Allotment and Assignment Procedures," Notice of Proposed Rulemaking, MB Docket 09-30 FCC 09-30, released April 20, 2009.

<sup>3</sup> "Field Strength Prediction in Irregular Terrain – the PTP Model" by Harry K. Wong, November 1, 2002. See report at <http://www.fcc.gov/oet/fm/ptp/report.pdf> for methodology and calculation examples.

exceeds the standard method by at least 10 percent. Therefore, the proposal satisfies the FCC's current policies regarding demonstration of principal community coverage with a supplemental method.

### **Proposed Site Allocation**

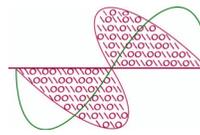
An allocation spacing summary table for the proposed transmitter site is provided in Table 3. The proposed site is fully spaced to all authorized full power facilities, proposed stations, and allotments contained in the Commission's CDBS, except for one facility that will comply with §73.215. Contour protection pursuant to §73.215 is specified with respect to KGCE(FM) (Lic Ch. 297C2 Post, TX).

Figure 5 depicts the pertinent protected and interfering contours for the proposed Ch. 299C3 with those of KGCE. Maximum class parameters are assumed for KGCE. Figure 5 demonstrates that no prohibited contour overlap would exist.

The nearest FCC monitoring station is 764 km distant at Douglas, AZ. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with "quiet" zones specified in §73.1030(a) and (b). Based on information extracted from the Commission's engineering database, there are no AM stations within 3.2 km of the proposed site. The site is located beyond the international coordination zones for FM stations.

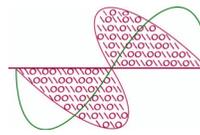
### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposed transmitting antenna will be side-mounted on an existing antenna support structure. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. No change in structure height is proposed, thus no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.



The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number 65. The proposed facility will employ a four element ERI model SHPX antenna or equivalent (EPA Type 3) with one wavelength element spacing. Based on OET-65 equation (10), considering 40 percent antenna relative field in downward elevations (manufacturer's pattern data in Figure 6 shows less than 40 percent relative field at angles 15 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $4.7 \mu\text{W}/\text{cm}^2$ , which is 2.3 percent of the general population/uncontrolled maximum permitted exposure limit ("MPE"). This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.



## **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.

Joseph M. Davis, P.E.  
July 30, 2010

**Chesapeake RF Consultants, LLC**  
11993 Kahns Road  
Manassas, VA 20112  
703-650-9600

### List of Attachments

Table 1	Allotment Point §73.207 Allocation Spacing Study
Figure 1	Allotment Point Principal Community Coverage
Figure 2	Proposed Coverage Contours
Figure 3	Principal Community Coverage
Figure 4	Terrain Profile and PTP Signal
Table 2	Terrain Data and Contour Distances
Table 3	Proposed Transmitter Site §73.207 Allocation Spacing Study
Figure 5	§73.215 Contour Protection
Figure 6	Antenna Elevation Pattern
Form 301	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered July 30, 2010 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

**Table 1**  
**Allotment Point**  
**§73.207 Allocation Spacing Study**  
 prepared for  
**Ramar Communications, Inc.**  
 New (FM) Idalou, TX

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REFERENCE                                     CLASS = C3                                     DISPLAY DATES
33 41 00.0 N.                                Current Spacings to 3rd Adj.                DATA 07-27-10
101 41 30.0 W.                                Channel 299 - 107.7 MHz                    SEARCH 07-27-10
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Call	Channel	Location		Azi	Dist	FCC	Margin
971014MA	VAC	299A	Idalou	TX	137.1	1.1	142.0 -140.9
KGCE	LIC	297C2	Post	TX	155.5	56.1	56.0 0.1
KTTQ	CP	298C2	Turkey	TX	43.9	121.8	117.0 4.8
KSMX-FM	LIC	298C1	Clovis	NM	291.6	157.2	144.0 13.3
KTTQ	APP-N	298C1	Mclean	TX	28.8	164.0	144.0 20.0
KTTQ	RSV	298C1	Mclean	TX	36.9	166.5	144.0 22.5
KZRK-FM	LIC	300C1	Canyon	TX	350.5	173.6	144.0 29.6
KQLM	LIC	300C1	Odessa	TX	197.7	184.5	144.0 40.5

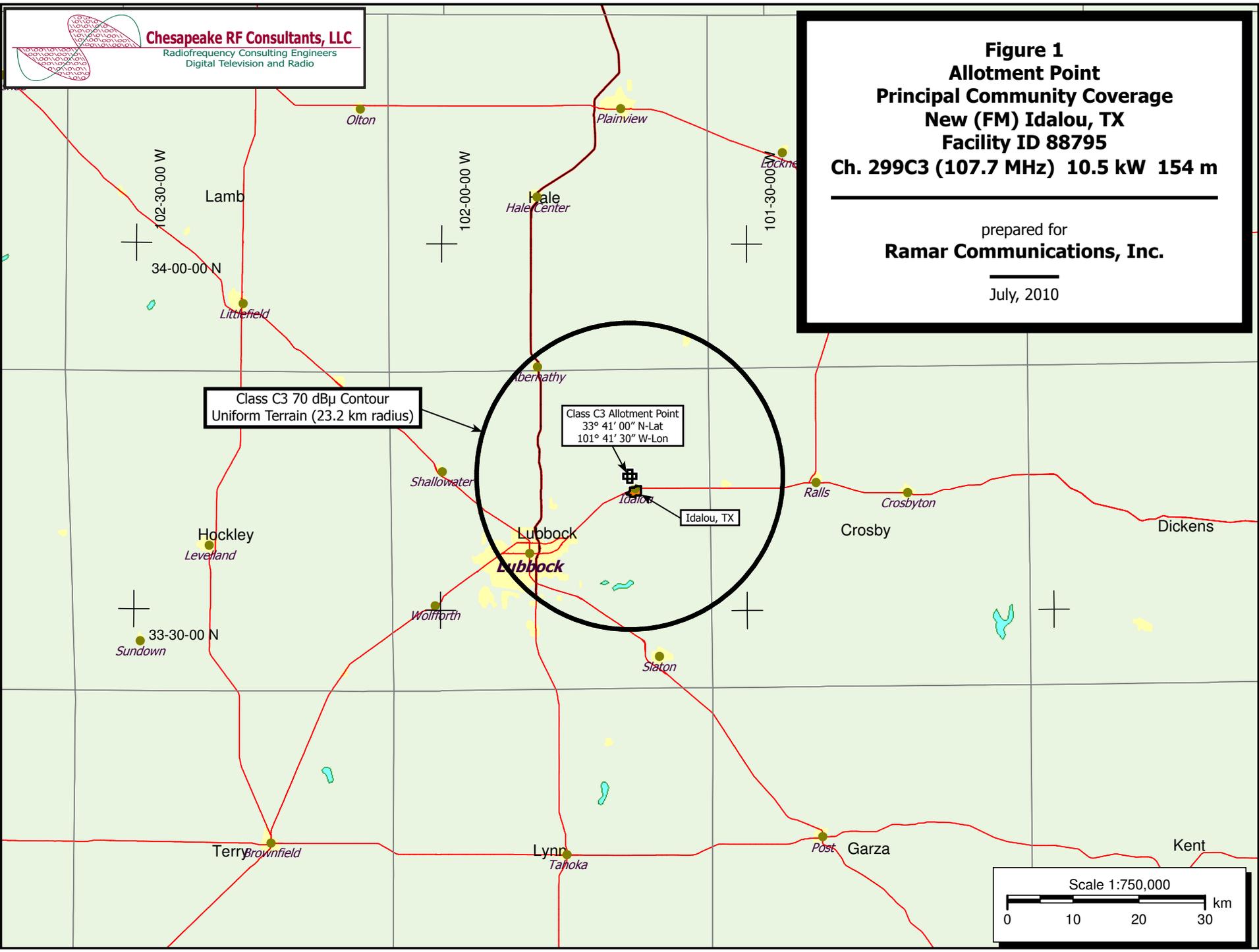
**Figure 1**  
**Allotment Point**  
**Principal Community Coverage**  
**New (FM) Idalou, TX**  
**Facility ID 88795**  
**Ch. 299C3 (107.7 MHz) 10.5 kW 154 m**

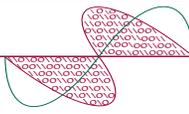
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prepared for  
**Ramar Communications, Inc.**

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July, 2010





**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

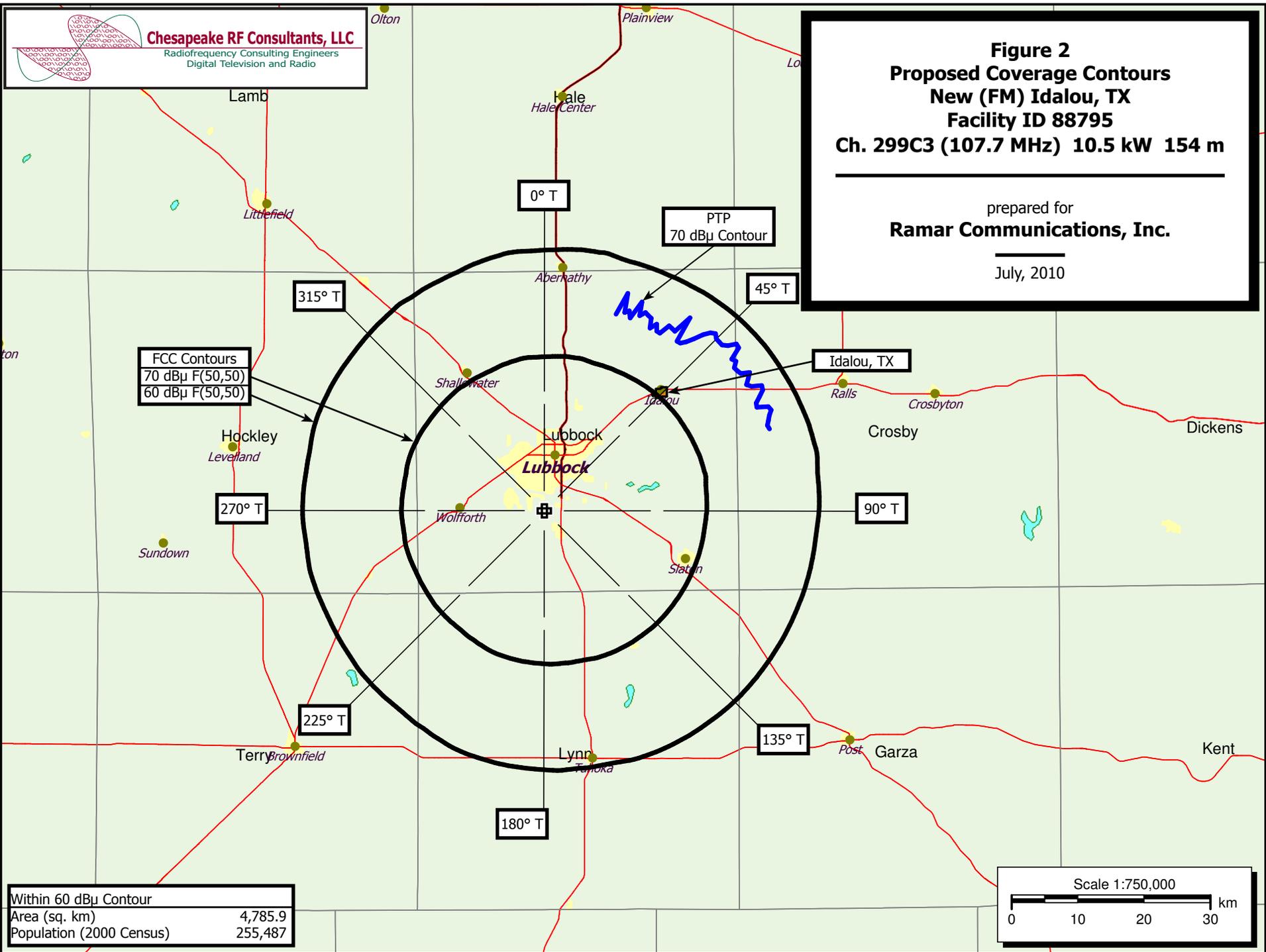
**Figure 2**  
**Proposed Coverage Contours**  
**New (FM) Idalou, TX**  
**Facility ID 88795**  
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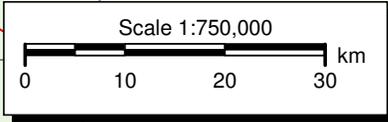
July, 2010



**FCC Contours**  
 70 dBu F(50,50)  
 60 dBu F(50,50)

PTP  
 70 dBu Contour

Within 60 dBu Contour	
Area (sq. km)	4,785.9
Population (2000 Census)	255,487

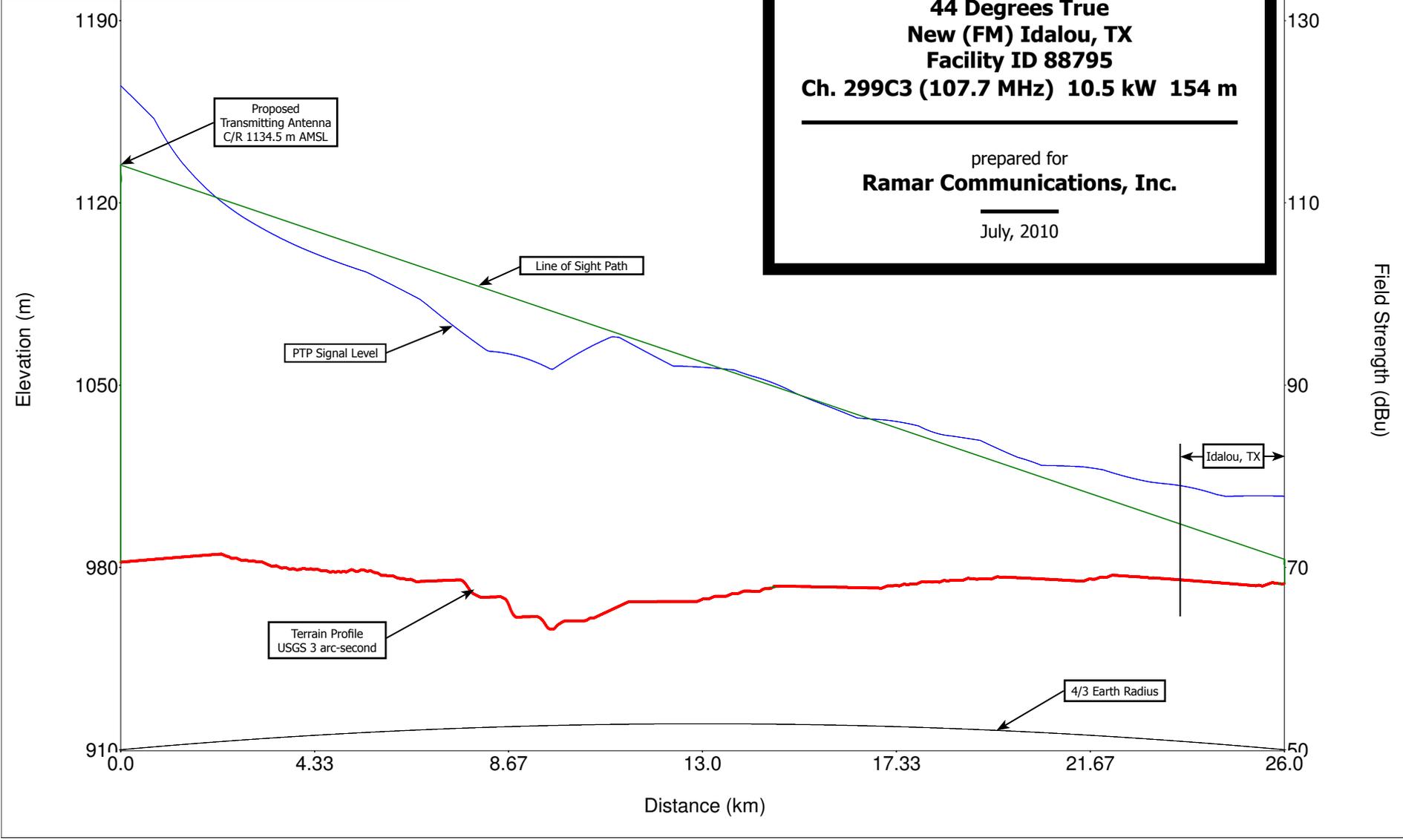




**Figure 4**  
**Terrain Profile and PTP Signal**  
**44 Degrees True**  
**New (FM) Idalou, TX**  
**Facility ID 88795**  
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 July, 2010



Starting Latitude: 33-30-08 N  
 Starting Longitude: 101-52-20 W

End Latitude: 33-40-14.51 N  
 End Longitude: 101-40-38.91 W

Distance: 26 km  
 Bearing: 44 deg

Table 2  
**Terrain Data and Contour Distances**

prepared for  
**Ramar Communications, Inc.**  
 New (FM) Idalou, TX



Latitude: 33-30-08 N  
 Longitude: 101-52-20 W  
 ERP: 10.50 kW  
 Channel: 299  
 Frequency: 107.7 MHz  
 AMSL Height: 1134.5 m  
 Terrain: USGS 3 Second

Azimuth (°T)	3-16 km Effective Height (m)	Contour Distance		
		FCC Curve 70 dBμ (km)	PTP 70 dBμ (km)	PTP Percent Increase
40	169.9	24.2	33.2	37.2%
41	170.5	24.2	34.3	41.7%
42	171.1	24.3	35.7	46.9%
43	171.7	24.3	36.7	51.0%
44	172.2	24.3	37.1	52.7%
45	172.7	24.4	36.6	50.0%
46	173.1	24.4	36.6	50.0%
47	173.6	24.4	36.6	50.0%
48	173.9	24.4	37.2	52.5%
49	174.2	24.4	38.3	57.0%
50	174.5	24.5	38.2	55.9%



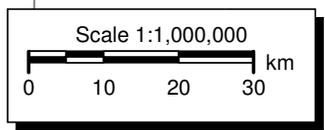
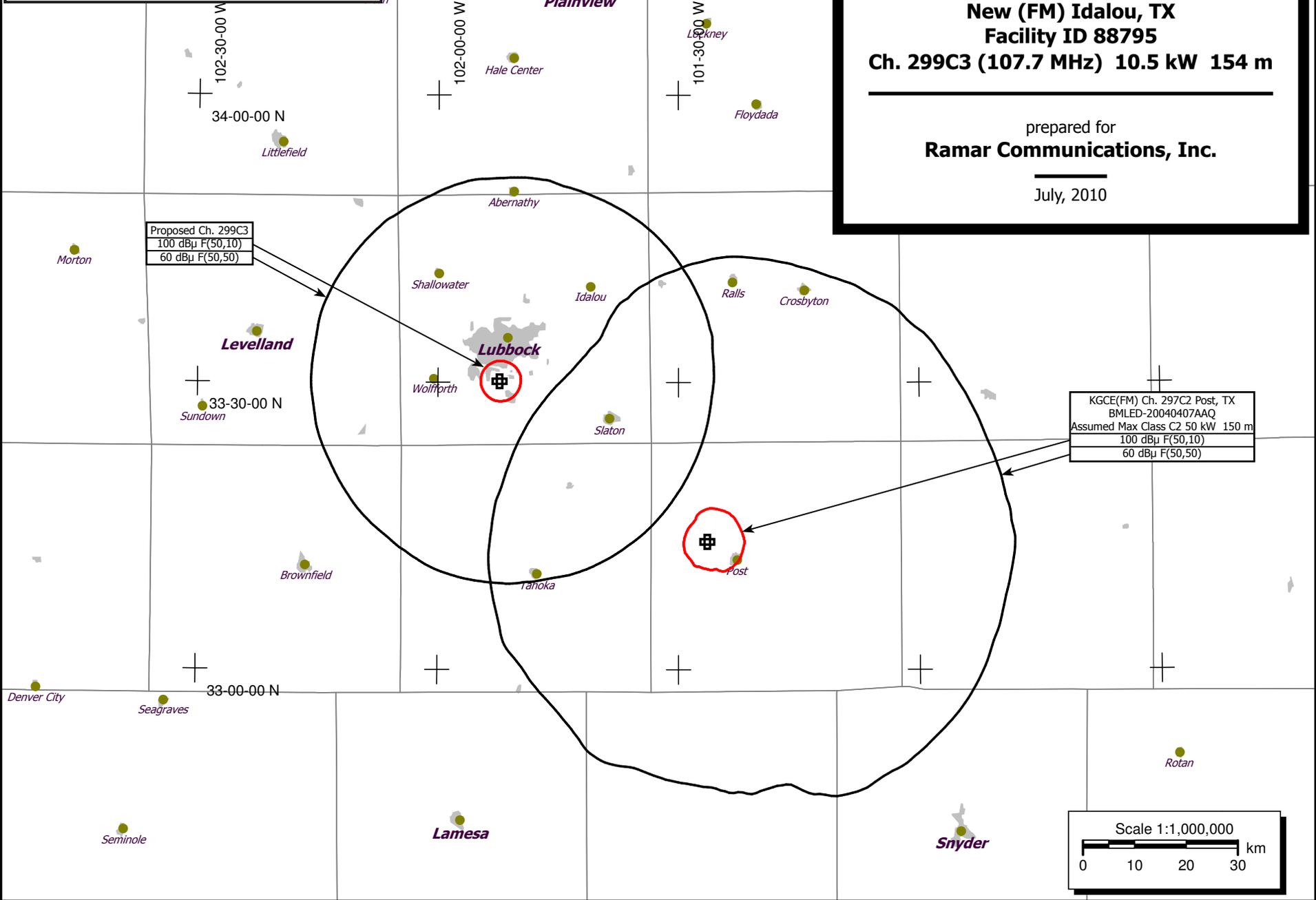
**Figure 5**  
**§73.215 Contour Protection**  
**New (FM) Idalou, TX**  
**Facility ID 88795**  
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prepared for  
**Ramar Communications, Inc.**

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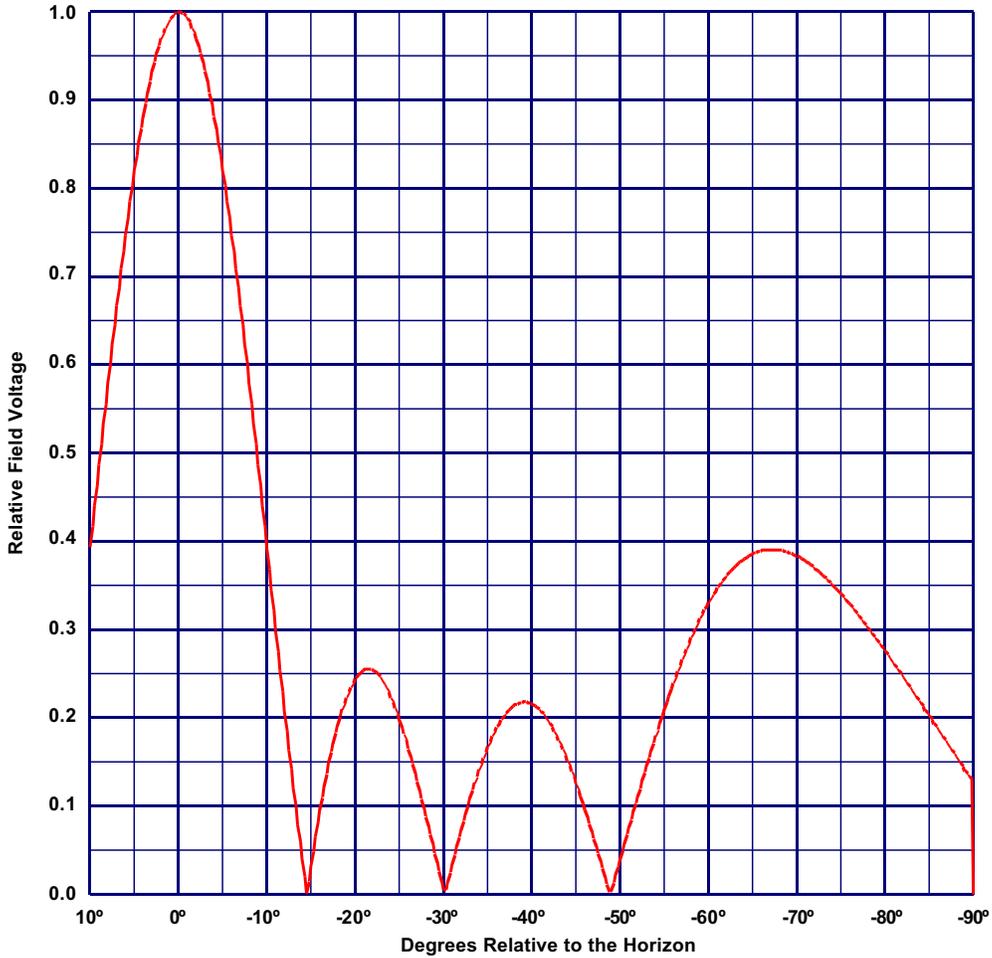
July, 2010



# **ERI**® **Vertical Plane Relative Field Pattern**

**ERI TYPE SHP, SHPX, MP, MPX, LP OR LPX ELEMENTS**

**A 4 level, 1 wave-length spaced non directional antenna  
with 0° beam tilt, 0% null fill and a H/V maximum power ratio of 1.000**



<b>Vertical Polarization Gain:</b> Maximum: 2.133 (3.290 dB) Horizontal Plane: 2.133 (3.290 dB)	<b>Horizontal Polarization Gain:</b> Maximum: 2.133 (3.290 dB) Horizontal Plane: 2.133 (3.290 dB)
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*Electronics Research, Inc.* 7777 Gardner Rd. Chandler, IN 47601 Phone: (812) 925-6000 Fax: (812) 925-4030 <http://www.eriinc.com/>



**Figure 6**  
**Antenna Elevation Pattern**  
**New (FM) Idalou, TX**  
**Facility ID 88795**  
**Ch. 299C3 (107.7 MHz) 10.5 kW 154 m**

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prepared for  
**Ramar Communications, Inc.**

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July, 2010

**Section III-B - FM Engineering**

**TECHNICAL SPECIFICATIONS**

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

**TECH BOX**

1. Channel Number: 299

2. Class (select one):  
 A  B1  B  C3  C2  C1  C0  C  D

3. Antenna Location Coordinates: (NAD 27)  
 Latitude:  
 Degrees 33 Minutes 30 Seconds 8  North  South  
 Longitude:  
 Degrees 101 Minutes 52 Seconds 20  West  East

4. Proposed Allotment or Assignment Coordinates: (NAD 27)  Not Applicable  
 Latitude:  
 Degrees 33 Minutes 41 Seconds 0  North  South  
 Longitude:  
 Degrees 101 Minutes 41 Seconds 30  West  East

5. Antenna Structure Registration Number: 1248244  
 Not Applicable  Notification filed with FAA

6. Overall Tower Height Above Ground Level: 289.6meters

7. Height of Radiation Center Above Mean Sea Level: 1135 meters(H) 1135 meters(V)

8. Height of Radiation Center Above Ground Level: 157meters(H) 157meters(V)

9. Height of Radiation Center Above Average Terrain: 154meters(H) 154meters(V)

10. Effective Radiated Power: 10.5 kW(H) 10.5 kW(V)

11. Maximum Effective Radiated Power:  Not Applicable (Beam-Tilt Antenna ONLY) kW(H) kW(V)

12. Directional Antenna Relative Field Values:  Not applicable (Nondirectional)  
 Rotation (Degrees):  No Rotation

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

[Relative Field Polar Plot](#)

**NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.**

**CERTIFICATION**

**AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 13-16. PROCEED TO ITEM 17.**

13. **Availability of Channels.** The proposed facility complies with the allotment requirements of 47 C.F.R. Section 73.203.  Yes  No  
 See Explanation in [Exhibit 24]

14. **Community Coverage.** The proposed facility complies with 47 C.F.R. Section 73.315.  Yes  No  
 See Explanation in [Exhibit 25]

15. **Main Studio Location.** The proposed main studio location complies with 47 C.F.R. Section 73.1125.  Yes  No  
 See Explanation in [Exhibit 26]

16.	<p><b>Interference.</b> The proposed facility complies with all of the following applicable rule sections: Check all those that apply:</p> <p><b>Separation Requirements.</b>  <input checked="" type="checkbox"/> a) 47 C.F.R. Section 73.207</p> <p><b>Grandfathered Short-Spaced.</b></p> <p><input type="checkbox"/> b) 47 C.F.R. Section 73.213(a) with respect to station(s): [Exhibit 28]  <b>Exhibit required</b></p> <p><input type="checkbox"/> c) 47 C.F.R. Section 73.213(b) with respect to station(s): [Exhibit 29]  <b>Exhibit required</b></p> <p><input type="checkbox"/> d) 47 C.F.R. Section 73.213(c) with respect to station(s): [Exhibit 30]  <b>Exhibit required.</b></p> <p><b>Contour Protection</b></p> <p><input checked="" type="checkbox"/> e) 47 C.F.R. Section 73.215 with respect to station(s): [Exhibit 31]  <b>Exhibit required.</b></p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>See Explanation in [Exhibit 27]</p>
17.	<p><b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an <b>Exhibit is required.</b></p> <p>By checking "Yes" above, 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.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>See Explanation in [Exhibit 32]</p>
18.	<p><b>Community of License Change - Section 307(b).</b> If the application is being submitted to change the facility's community of license, then the applicant certifies that it has attached an exhibit containing information demonstrating that the proposed community of license change constitutes a preferential arrangement of station assignments under Section 307(b) of the Communications Act of 1934, as amended (47 U.S.C. Section 307(b)).</p> <p><b>An exhibit is required</b> unless this question is not applicable.</p>	<p><input type="radio"/> Yes <input type="radio"/> No</p> <p><input checked="" type="radio"/> N/A</p> <p>[Exhibit 33]</p>
<p><b>PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.</b></p>		

### SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.	Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature	Date 7/30/2010	
Mailing Address CHESAPEAKE RF CONSULTANTS, LLC PO BOX 1088		
City YORKTOWN	State or Country (if foreign address) VA	Zip Code 23692 -
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	