

**DELAUDER COMMUNICATIONS, INC.**

P.O. Box 1095  
Ashburn, Virginia 20146-1095  
(703) 299-9222

**ENGINEERING REPORT**

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**Rosenberg, TX, Channel 291D FM Translator Application**

**ENGINEERING STATEMENT**

Primera Iglesia Evangelica de Apostoles y Profetas ("Applicant") proposes this minor amendment to BPFT-20130801AHD to specify use of channel 291D (as opposed to 241D) at its new transmitter site that will now serve Rosenberg, TX. (K294BH is currently licensed on channel 294D at Simonton, TX.)

This filing includes a site change and community change (to Rosenberg, TX) along with a channel displacement from 294 to 291. The displacement from channel 294 to channel 291 is deemed a minor change pursuant to Section 74.1233(a) of the FCC Rules.

Figure EE-A, attached, is a map showing 60 dBu F50,50 contour overlap between the licensed and herein proposed facilities.

**CHANNEL STUDY**

Attached as Figure EE1 is a channel study for the proposed channel 291D facility. All required protections are met by contour non-overlap pursuant to Section 74.1204, with the exception of protection to KHCB-FM 289C and KOVE-FM 293C, both licensed to Houston, TX. KHCB-FM and KOVE-FM are protected, as discussed below.

**CONTOUR NON-OVERLAP PROTECTION SHOWING**

Figure EE2, attached, shows non-overlap between the service contour of the proposed Bellaire 291L1 facility (with maximum omni service) and the interference contour of the proposed channel 291D facility. All contours were determined pursuant to Section 73.313 of the FCC Rules using a USGS 30 arc-second terrain database at one-degree radial intervals.

**PROTECTION TO KHCB-FM AND KOVE-FM**

KHCB-FM and KOVE-FM are both second adjacent-channel to the proposed channel 291D facility. The 60 dBu F50,50 service contours of KHCB-FM and KOVE-FM extend well beyond the proposed 291D transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to KHCB-FM and KOVE-FM.

Note that a rule waiver of Section 74.1204 for this second/third adjacent-channel protection using the well-established *Living Way Ministries* Methodology is respectfully requested if such a rule waiver is deemed necessary for protection to these stations.

The F50,50 signal strength from KHCB-FM at the proposed 291D transmitter site is 84 dBu (the “desired” signal). The F50,50 signal strength from KOVE-FM at the proposed 291D transmitter site is 66 dBu (the “desired” signal). The second/third adjacent-channel protection of Section 74.1204 is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to KHCB-FM and KOVE-FM from the proposed 291D facility is a signal of greater than or equal to 106 dBu (needed to protect the worst-case station, KOVE-FM).

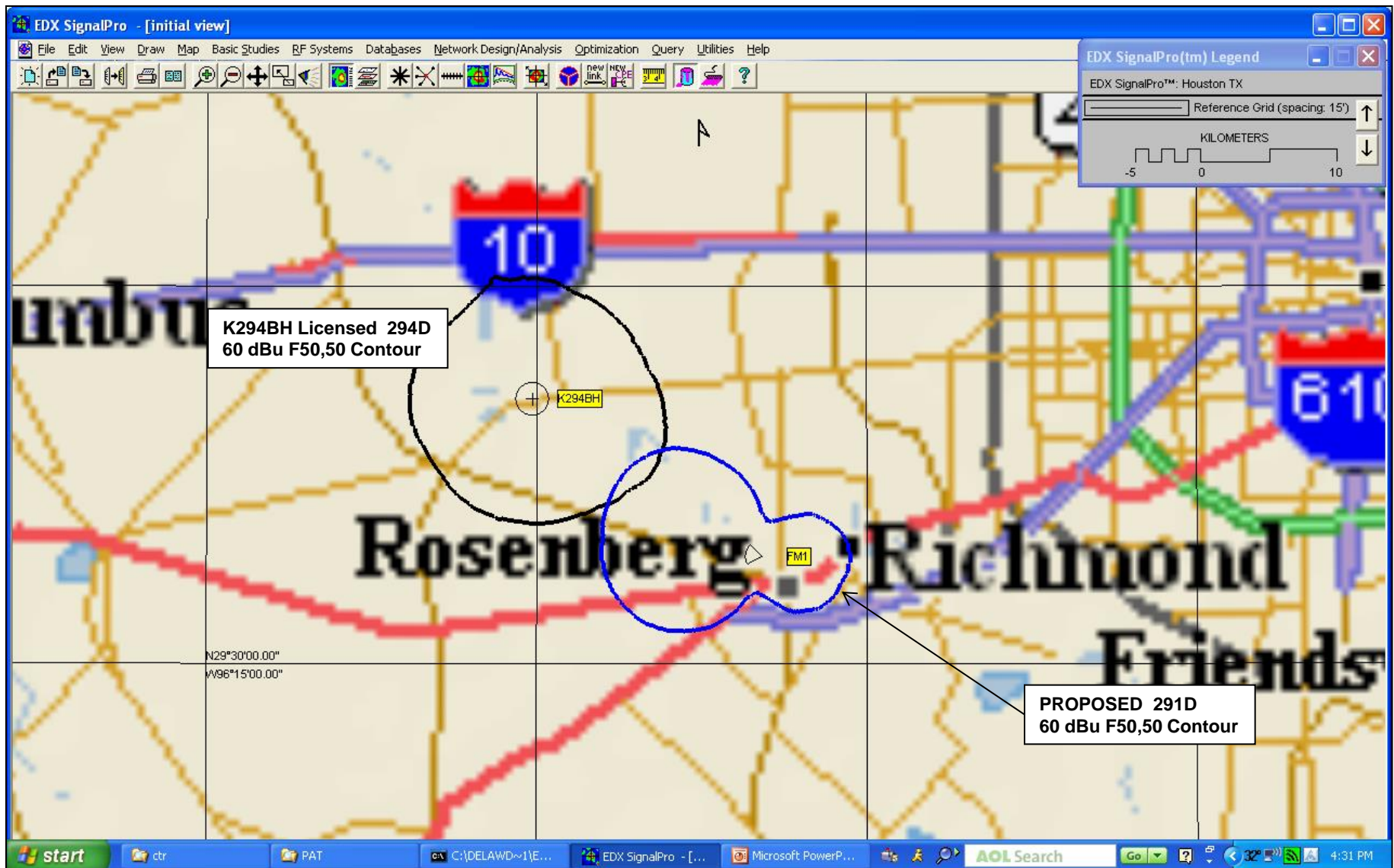
Figure EE3 is the vertical plane relative field pattern for the proposed Scala CA2 (H-Pol) 5-Bay Halfwave-spaced antenna. By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 106 dBu interfering signal (using a free space field determination) does not exist at any point at ground level. (As demonstrated below, the clearance is at least 7.9 meters.)

Attached as Figure EE4 is a tabulation of various points (at ground level) from the proposed translator tower base. (Column B is the different distances from the tower base to each studied point.) The actual distance from the antenna to each point is listed in Column C, the hypotenuse of the vertical height (Column A) and the horizontal distance (Column B). Also, the vertical distance from the antenna bottom to the calculated interference signal for each studied point is provided in Column K. Because the calculated distance to the free space interfering signal (Column J) is less than the hypotenuse distance (Column C) and the interfering signal vertical distance (Column K) is less than the vertical distance (Column A) for each studied point, the interfering signal does not reach any studied point. (In other words, the interfering signal does not make it to ground level any point.)

Figure EE5, attached, is an aerial photo of the proposed site. With the 7.9 meters of clearance shown by Figure EE4, no interference will result within 558 meters (the maximum potential interference distance) of the proposed site.

Therefore, pursuant to Section 74.1204(d) of the FCC Rules, KHCB-FM and KOVE-FM are adequately protected by the proposed facility.

**FIGURE EE-A: K294BH TO ROSENBERG, TX, 291D FACILITY  
CONTOUR OVERLAP SHOWING**



**SECTION 74.1204 CHANNEL STUDY****PROJECT: ROSENBERG, TX, 291D FROM PROPOSED SITE****STUDY COORDINATES: N 29-34-16.0; W 95-49-47.0 (N D-M-S; W D-M-S)**

Call Docket	Channel FacilityID	Class Service	Frequency ERP	Status DA?	City HAAT	State RCAMSL	Country RCAGL	File Number
Latitude	Longitude			ASRN	Dist (km)	Dist (mi)	Azimuth	
Licensee/Permittee								
KHCB-FM	289 C	FM	105.7 MHz	LIC	HOUSTON			TX US
19911024KB	-		27702		100. kW	492. m	511. m	487. m
N 29 34	6.00 W	95 29	57.00	-	32.03 km	19.90 mi	90.47°	HOUSTON
CHRISTIAN BROADCASTERS, INC.								

**NOTE: A SHOWING BASED ON THE LIVING WAY MINISTRIES METHODOLOGY TO THIS STATION IS INCLUDED WITH THIS APPLICATION THAT DEMONSTRATES PROTECTION TO THIS FACILITY.**

KTTX	291 C2	FM	106.1 MHz	LIC	BRENNHAM			TX US
19920221KB	-		67301		50. kW	150. m	235. m	144. m
N 30 21	48.00 W	96 34	33.00	-	113.57 km	70.57 mi	320.98°	TOM S.
WHITEHEAD, INC.								

**Protected Contour Dist: 54.8 km Prop 291D Interf Contour Dist: 44.0 km**  
**Result: 14.8 km CLEAR (WORST-CASE STUDY)**

NEW	291 L1	FL	106.1 MHz	APP	EL CAMPO			TX US
20131114BVO	-		197103		0.1 kW	27. m	48.5 m	25.9 m
N 29 4	33.90 W	96 12	56.80	1208418	66.46 km	41.30 mi	214.31°	JACKSON
ELECTRIC COOPERATIVE, INC.								

**Protected Contour Dist: 5.6 km Prop 291D Interf Contour Dist: 44.0 km**  
**Result: 16.9 km CLEAR (WORST-CASE STUDY)**

NEW	291 L1	FL	106.1 MHz	APP	HOUSTON			TX US
20131114ACX	-		194591		0.0104 kW	90.6 m	104. m	89. m
N 29 47	46.00 W	95 17	22.00	1048210	57.94 km	36.00 mi	64.26°	HOUSTON
CENTRO CRISTIANO DE RESTAURACION								

**Protected Contour Dist: 5.6 km Prop 291D Interf Contour Dist: 44.0 km**  
**Result: 8.3 km CLEAR (WORST-CASE STUDY)**

NEW	291 L1	FL	106.1 MHz	APP	BELLAIRE			TX US
20131112ADM	-		193784		0.0807 kW	33.3 m	53. m	30. m
N 29 34	15.00 W	95 30	37.00	1064696	30.95 km	19.23 mi	89.98°	BELLAIRE
RADIO OF THE COMMUNITY								

**Protected Contour Dist: 5.6 km Prop 291D Interf Contour Dist: 44.0 km**  
**Result: -18.7 km SHORT (WORST-CASE STUDY); See Contour Non-overlap Showing**

KOVE-FM	293 C	FM	106.5 MHz	LIC	GALVESTON			TX US
20091023ABD	-		19091		100. kW	598. m	600. m	596. m
N 29 18	0.00 W	95 6	40.00	1254220	75.93 km	47.18 mi	113.25°	
UNIVISION RADIO LICENSE CORPORATION								

**NOTE: A SHOWING BASED ON THE LIVING WAY MINISTRIES METHODOLOGY TO THIS STATION IS INCLUDED WITH THIS APPLICATION THAT DEMONSTRATES PROTECTION TO THIS FACILITY.**

MARCH 24, 2014

**SECTION 74.1204 CHANNEL STUDY****PROJECT: ROSENBERG, TX, 291D FROM PROPOSED SITE****STUDY COORDINATES: N 29-34-16.0; W 95-49-47.0 (N D-M-S; W D-M-S)**

Call	Channel	Class	Frequency	Status	City	State	Country	File Number
Docket	FacilityID	Service	ERP	DA?	HAAT	RCAMSL	RCAGL	
Latitude	Longitude			ASRN	Dist (km)	Dist (mi)	Azimuth	
Licensee/Permittee								
K294BH	294 D	FX	106.7 MHz	LIC	SIMONTON		TX US	BLFT-
20071003AAL	-		147704		0.25 kW	49.6 m	83. m	50. m
N 29 40 32.35	W 96 0 11.45		1206953		20.41 km	12.68 mi	304.78°	PRIMERA
IGLESIA EVANGELICA DE APOSTOLES Y PROFETAS								

**NOTE: THIS IS THE APPLICANT'S LICENSED FACILITY; AN AMENDMENT TO IT'S PENDING APPLICATION FOR CHANNEL 241D IS BEING HEREIN PROPOSED BY THE APPLICANT.**

Study Complete

**FIGURE EE2: PROPOSED ROSENBERG, TX, 291D FACILITY  
NON CONTOUR OVERLAP WITH BELLAIRE 291L1 LPFM SHOWING**

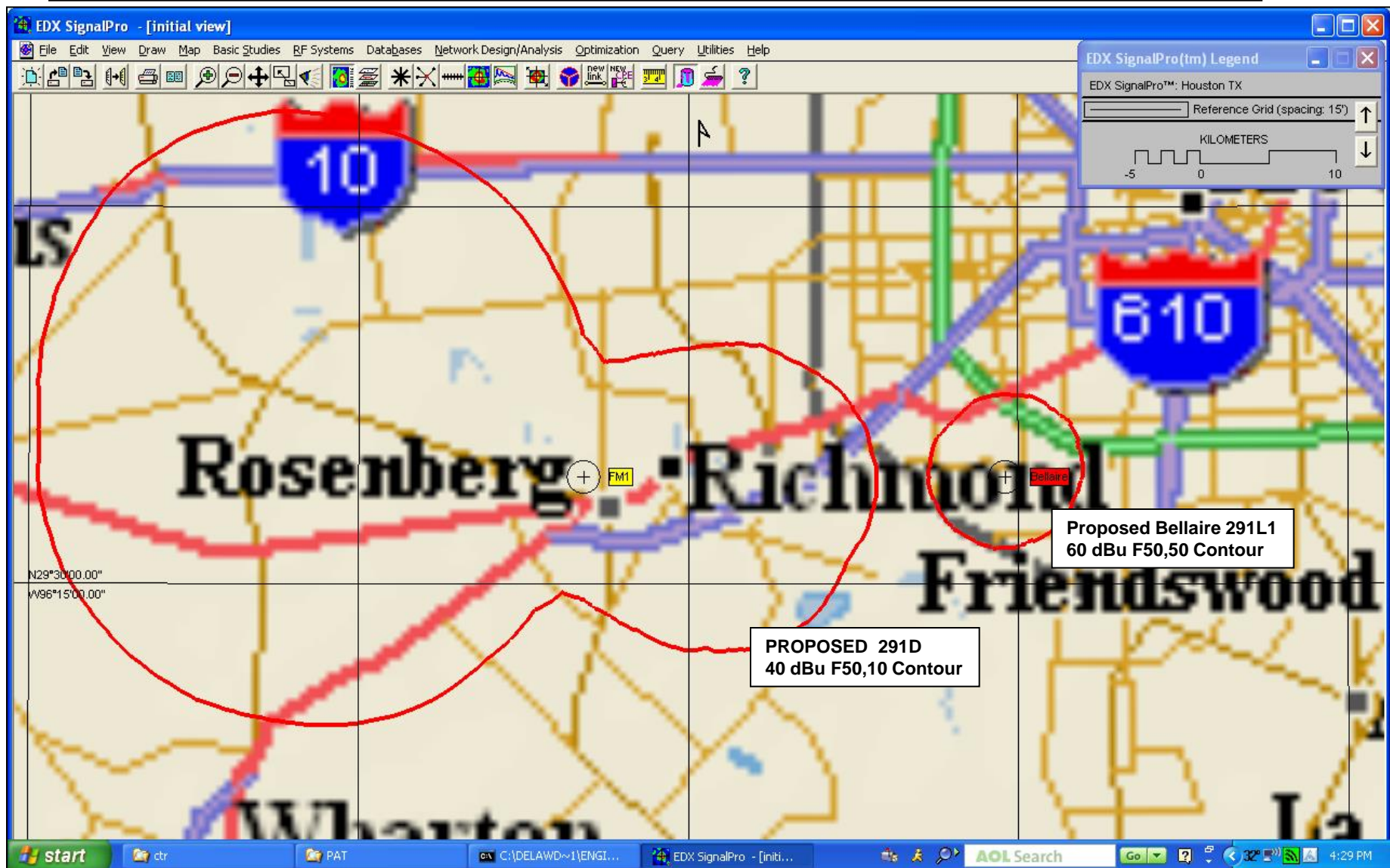
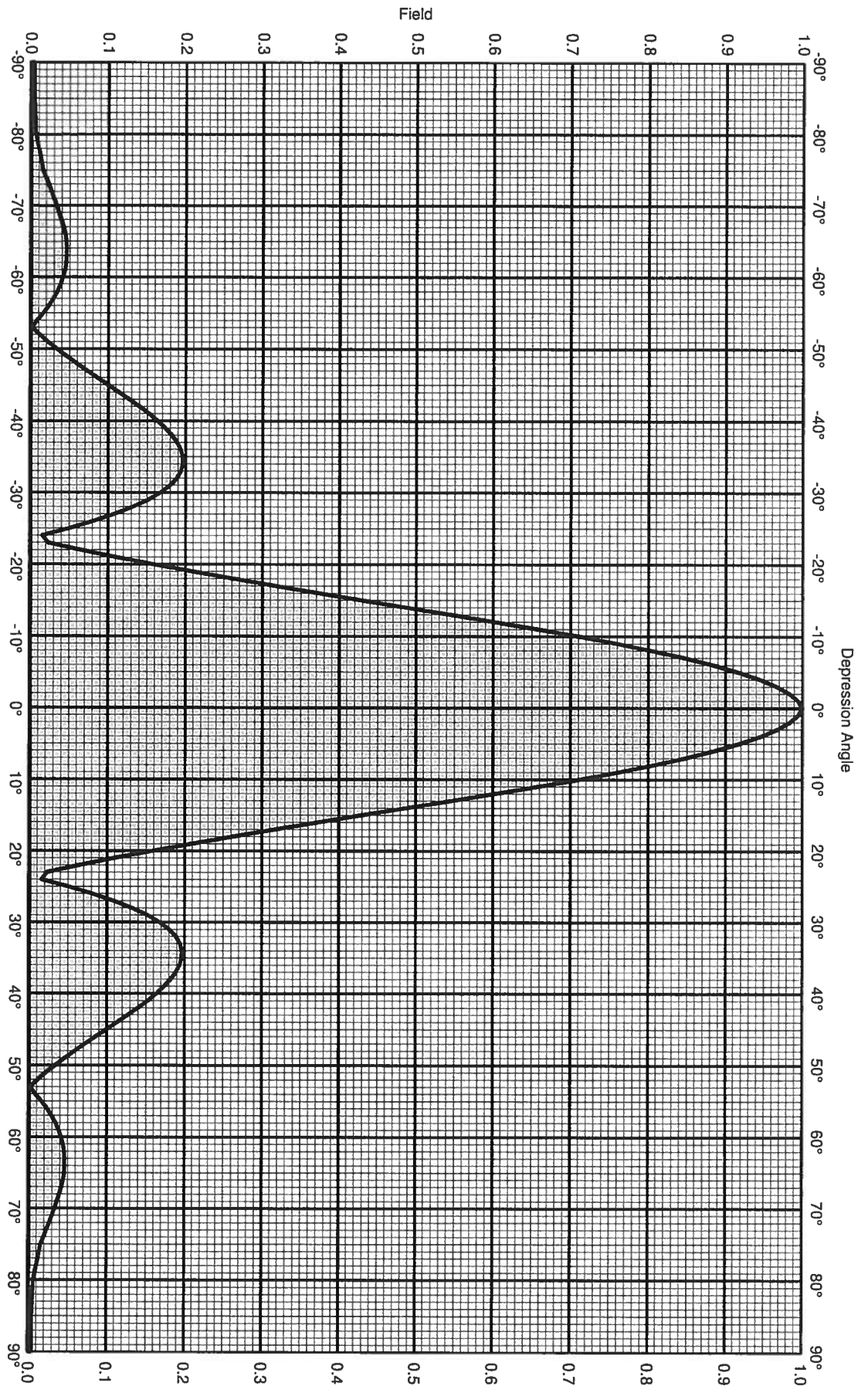




FIGURE EE3 (Page 1 of 3)



5 x CA2-FM/HV Array

Frequency: 106.1 MHz (CH 291)

Gain: 9.8 dBd (x 9.5)

Horizontal Polarization

Vertical Stacked 0.5 wavelength

Vertical plane Pattern

**KATHREIN**  
SCALA DIVISION



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5 x CA2-FM/HV Array

Frequency: 106.1 MHz (CH 291)

Gain: 9.8 dBd (x 9.5)

Horizontal Polarization

Vertical Stacked 0.5 wavelength

Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-30.20	0.00	-45	0.100	-19.99	-10.19	0.10
-89	0.010	-40.00	-30.20	0.00	-44	0.114	-18.89	-9.09	0.12
-88	0.010	-40.00	-30.20	0.00	-43	0.127	-17.92	-8.12	0.15
-87	0.010	-40.00	-30.20	0.00	-42	0.140	-17.07	-7.27	0.19
-86	0.010	-40.00	-30.20	0.00	-41	0.152	-16.34	-6.54	0.22
-85	0.010	-40.00	-30.20	0.00	-40	0.164	-15.71	-5.91	0.26
-84	0.010	-40.00	-30.20	0.00	-39	0.174	-15.20	-5.40	0.29
-83	0.010	-40.00	-30.20	0.00	-38	0.182	-14.80	-5.00	0.32
-82	0.010	-40.00	-30.20	0.00	-37	0.189	-14.48	-4.68	0.34
-81	0.010	-40.00	-30.20	0.00	-36	0.193	-14.27	-4.47	0.36
-80	0.010	-40.00	-30.20	0.00	-35	0.196	-14.16	-4.36	0.37
-79	0.010	-40.00	-30.20	0.00	-34	0.196	-14.14	-4.34	0.37
-78	0.010	-40.00	-30.20	0.00	-33	0.194	-14.25	-4.45	0.36
-77	0.012	-38.59	-28.79	0.00	-32	0.189	-14.49	-4.69	0.34
-76	0.014	-37.31	-27.51	0.00	-31	0.180	-14.90	-5.10	0.31
-75	0.015	-36.22	-26.42	0.00	-30	0.168	-15.49	-5.69	0.27
-74	0.019	-34.29	-24.49	0.00	-29	0.152	-16.37	-6.57	0.22
-73	0.023	-32.75	-22.95	0.01	-28	0.132	-17.57	-7.77	0.17
-72	0.027	-31.51	-21.71	0.01	-27	0.109	-19.26	-9.46	0.11
-71	0.030	-30.47	-20.67	0.01	-26	0.082	-21.76	-11.96	0.06
-70	0.033	-29.61	-19.81	0.01	-25	0.051	-25.92	-16.12	0.02
-69	0.036	-28.77	-18.97	0.01	-24	0.016	-36.04	-26.24	0.00
-68	0.039	-28.08	-18.28	0.01	-23	0.023	-32.87	-23.07	0.00
-67	0.042	-27.53	-17.73	0.02	-22	0.065	-23.78	-13.98	0.04
-66	0.044	-27.10	-17.30	0.02	-21	0.110	-19.16	-9.36	0.12
-65	0.046	-26.80	-17.00	0.02	-20	0.159	-16.00	-6.20	0.24
-64	0.046	-26.70	-16.90	0.02	-19	0.209	-13.58	-3.78	0.42
-63	0.046	-26.72	-16.92	0.02	-18	0.262	-11.63	-1.83	0.66
-62	0.045	-26.86	-17.06	0.02	-17	0.317	-9.98	-0.18	0.96
-61	0.044	-27.16	-17.36	0.02	-16	0.373	-8.56	1.24	1.33
-60	0.042	-27.63	-17.83	0.02	-15	0.430	-7.33	2.47	1.77
-59	0.038	-28.32	-18.52	0.01	-14	0.488	-6.24	3.56	2.27
-58	0.034	-29.30	-19.50	0.01	-13	0.545	-5.27	4.53	2.84
-57	0.029	-30.69	-20.89	0.01	-12	0.602	-4.40	5.40	3.46
-56	0.023	-32.71	-22.91	0.01	-11	0.658	-3.63	6.17	4.14
-55	0.016	-35.88	-26.08	0.00	-10	0.712	-2.95	6.85	4.84
-54	0.010	-40.00	-30.20	0.00	-9	0.761	-2.38	7.42	5.52
-53	0.010	-40.00	-30.20	0.00	-8	0.806	-1.88	7.92	6.20
-52	0.011	-38.95	-29.15	0.00	-7	0.847	-1.44	8.36	6.86
-51	0.022	-33.08	-23.28	0.00	-6	0.885	-1.06	8.74	7.47
-50	0.034	-29.39	-19.59	0.01	-5	0.917	-0.75	9.05	8.04
-49	0.046	-26.71	-16.91	0.02	-4	0.945	-0.49	9.31	8.53
-48	0.059	-24.57	-14.77	0.03	-3	0.967	-0.29	9.51	8.94
-47	0.072	-22.80	-13.00	0.05	-2	0.984	-0.14	9.66	9.25
-46	0.086	-21.29	-11.49	0.07	-1	0.995	-0.04	9.76	9.45
					0	1.000	0.00	9.80	9.55



5 x CA2-FM/HV Array

Frequency: 106.1 MHz (CH 291)

Gain: 9.8 dBd (x 9.5)

Horizontal Polarization

Vertical Stacked 0.5 wavelength

Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	9.80	9.55	45	0.100	-19.99	-10.19	0.10
1	0.995	-0.04	9.76	9.45	46	0.086	-21.29	-11.49	0.07
2	0.984	-0.14	9.66	9.25	47	0.072	-22.80	-13.00	0.05
3	0.967	-0.29	9.51	8.94	48	0.059	-24.57	-14.77	0.03
4	0.945	-0.49	9.31	8.53	49	0.046	-26.71	-16.91	0.02
5	0.917	-0.75	9.05	8.04	50	0.034	-29.39	-19.59	0.01
6	0.885	-1.06	8.74	7.47	51	0.022	-33.08	-23.28	0.00
7	0.847	-1.44	8.36	6.86	52	0.011	-38.95	-29.15	0.00
8	0.806	-1.87	7.93	6.20	53	0.010	-40.00	-30.20	0.00
9	0.761	-2.38	7.42	5.52	54	0.010	-40.00	-30.20	0.00
10	0.712	-2.95	6.85	4.84	55	0.016	-35.89	-26.09	0.00
11	0.658	-3.63	6.17	4.14	56	0.023	-32.71	-22.91	0.01
12	0.602	-4.40	5.40	3.46	57	0.029	-30.69	-20.89	0.01
13	0.545	-5.27	4.53	2.84	58	0.034	-29.30	-19.50	0.01
14	0.488	-6.24	3.56	2.27	59	0.038	-28.32	-18.52	0.01
15	0.430	-7.33	2.47	1.77	60	0.042	-27.63	-17.83	0.02
16	0.373	-8.56	1.24	1.33	61	0.044	-27.16	-17.36	0.02
17	0.317	-9.98	-0.18	0.96	62	0.045	-26.86	-17.06	0.02
18	0.262	-11.63	-1.83	0.66	63	0.046	-26.72	-16.92	0.02
19	0.209	-13.58	-3.78	0.42	64	0.046	-26.70	-16.90	0.02
20	0.159	-15.99	-6.19	0.24	65	0.046	-26.80	-17.00	0.02
21	0.110	-19.16	-9.36	0.12	66	0.044	-27.10	-17.30	0.02
22	0.065	-23.78	-13.98	0.04	67	0.042	-27.53	-17.73	0.02
23	0.023	-32.87	-23.07	0.00	68	0.039	-28.08	-18.28	0.01
24	0.016	-36.05	-26.25	0.00	69	0.036	-28.77	-18.97	0.01
25	0.051	-25.92	-16.12	0.02	70	0.033	-29.61	-19.81	0.01
26	0.082	-21.76	-11.96	0.06	71	0.030	-30.47	-20.67	0.01
27	0.109	-19.26	-9.46	0.11	72	0.027	-31.51	-21.71	0.01
28	0.132	-17.57	-7.77	0.17	73	0.023	-32.75	-22.95	0.01
29	0.152	-16.37	-6.57	0.22	74	0.019	-34.29	-24.49	0.00
30	0.168	-15.49	-5.69	0.27	75	0.015	-36.22	-26.42	0.00
31	0.180	-14.90	-5.10	0.31	76	0.014	-37.31	-27.51	0.00
32	0.189	-14.49	-4.69	0.34	77	0.012	-38.59	-28.79	0.00
33	0.194	-14.25	-4.45	0.36	78	0.010	-40.00	-30.20	0.00
34	0.196	-14.14	-4.34	0.37	79	0.010	-40.00	-30.20	0.00
35	0.196	-14.16	-4.36	0.37	80	0.010	-40.00	-30.20	0.00
36	0.193	-14.27	-4.47	0.36	81	0.010	-40.00	-30.20	0.00
37	0.189	-14.48	-4.68	0.34	82	0.010	-40.00	-30.20	0.00
38	0.182	-14.80	-5.00	0.32	83	0.010	-40.00	-30.20	0.00
39	0.174	-15.20	-5.40	0.29	84	0.010	-40.00	-30.20	0.00
40	0.164	-15.71	-5.91	0.26	85	0.010	-40.00	-30.20	0.00
41	0.152	-16.34	-6.54	0.22	86	0.010	-40.00	-30.20	0.00
42	0.140	-17.07	-7.27	0.19	87	0.010	-40.00	-30.20	0.00
43	0.127	-17.92	-8.12	0.15	88	0.010	-40.00	-30.20	0.00
44	0.114	-18.88	-9.08	0.12	89	0.010	-40.00	-30.20	0.00
					90	0.010	-40.00	-30.20	0.00

## FIGURE EE4

### FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: ROSENBERG, TX, CHANNEL 291D

25-Mar-14

Pt	Column A Vert Dist From Ant Bottom (meters)	Column B Horiz Dist From Tower Base (meters)	Column C Hypot- enuse Dist fr Ant Bottom (meters)	Column D Down- ward Angle fr Ant Bottom (degrees)	Column E Max ERP (watts)	Column F Max ERP (dBmw)	Column G Pattern Relative Field at Down- ward Angle	Column H Free Space Inter- ferring Signal (dBu)	Column I Adjusted ERP in Down- ward Angle (dBmW)	Column J Interf Distance along Hypot- enuse (meters)	Column K Vert Interf Distance below Antenna (meters)
1	79	0.1	79.0	<a href="#">89.9</a>	250	<a href="#">53.98</a>	0.010	106.0	<a href="#">13.98</a>	5.6	<a href="#">5.6</a>
2	79	10	79.6	<a href="#">82.8</a>	250	<a href="#">53.98</a>	0.010	106.0	<a href="#">13.98</a>	5.6	<a href="#">5.5</a>
3	79	20	81.5	<a href="#">75.8</a>	250	<a href="#">53.98</a>	0.015	106.0	<a href="#">17.50</a>	8.4	<a href="#">8.1</a>
4	79	30	84.5	<a href="#">69.2</a>	250	<a href="#">53.98</a>	0.036	106.0	<a href="#">25.11</a>	20.1	<a href="#">18.8</a>
5	79	40	88.5	<a href="#">63.1</a>	250	<a href="#">53.98</a>	0.046	106.0	<a href="#">27.23</a>	25.7	<a href="#">22.9</a>
6	79	50	93.5	<a href="#">57.7</a>	250	<a href="#">53.98</a>	0.034	106.0	<a href="#">24.61</a>	19.0	<a href="#">16.0</a>
7	79	70	105.6	<a href="#">48.5</a>	250	<a href="#">53.98</a>	0.059	106.0	<a href="#">29.40</a>	32.9	<a href="#">24.6</a>
8	79	90	119.8	<a href="#">41.3</a>	250	<a href="#">53.98</a>	0.152	106.0	<a href="#">37.62</a>	84.8	<a href="#">55.9</a>
9	79	120	143.7	<a href="#">33.4</a>	250	<a href="#">53.98</a>	0.196	106.0	<a href="#">39.82</a>	109.3	<a href="#">60.1</a>
10	79	150	169.5	<a href="#">27.8</a>	250	<a href="#">53.98</a>	0.132	106.0	<a href="#">36.39</a>	73.6	<a href="#">34.3</a>
11	79	200	215.0	<a href="#">21.6</a>	250	<a href="#">53.98</a>	0.110	106.0	<a href="#">34.81</a>	61.4	<a href="#">22.5</a>
12	79	250	262.2	<a href="#">17.5</a>	250	<a href="#">53.98</a>	0.317	106.0	<a href="#">44.00</a>	176.8	<a href="#">53.3</a>
13	79	300	310.2	<a href="#">14.8</a>	250	<a href="#">53.98</a>	0.488	106.0	<a href="#">47.75</a>	272.2	<a href="#">69.3</a>
14	79	400	407.7	<a href="#">11.2</a>	250	<a href="#">53.98</a>	0.658	106.0	<a href="#">50.34</a>	367.0	<a href="#">71.1</a>
15	79	500	506.2	<a href="#">9.0</a>	250	<a href="#">53.98</a>	0.761	106.0	<a href="#">51.61</a>	424.5	<a href="#">66.2</a>
16	79	560	565.5	<a href="#">8.0</a>	250	<a href="#">53.98</a>	0.806	106.0	<a href="#">52.11</a>	449.6	<a href="#">62.8</a>

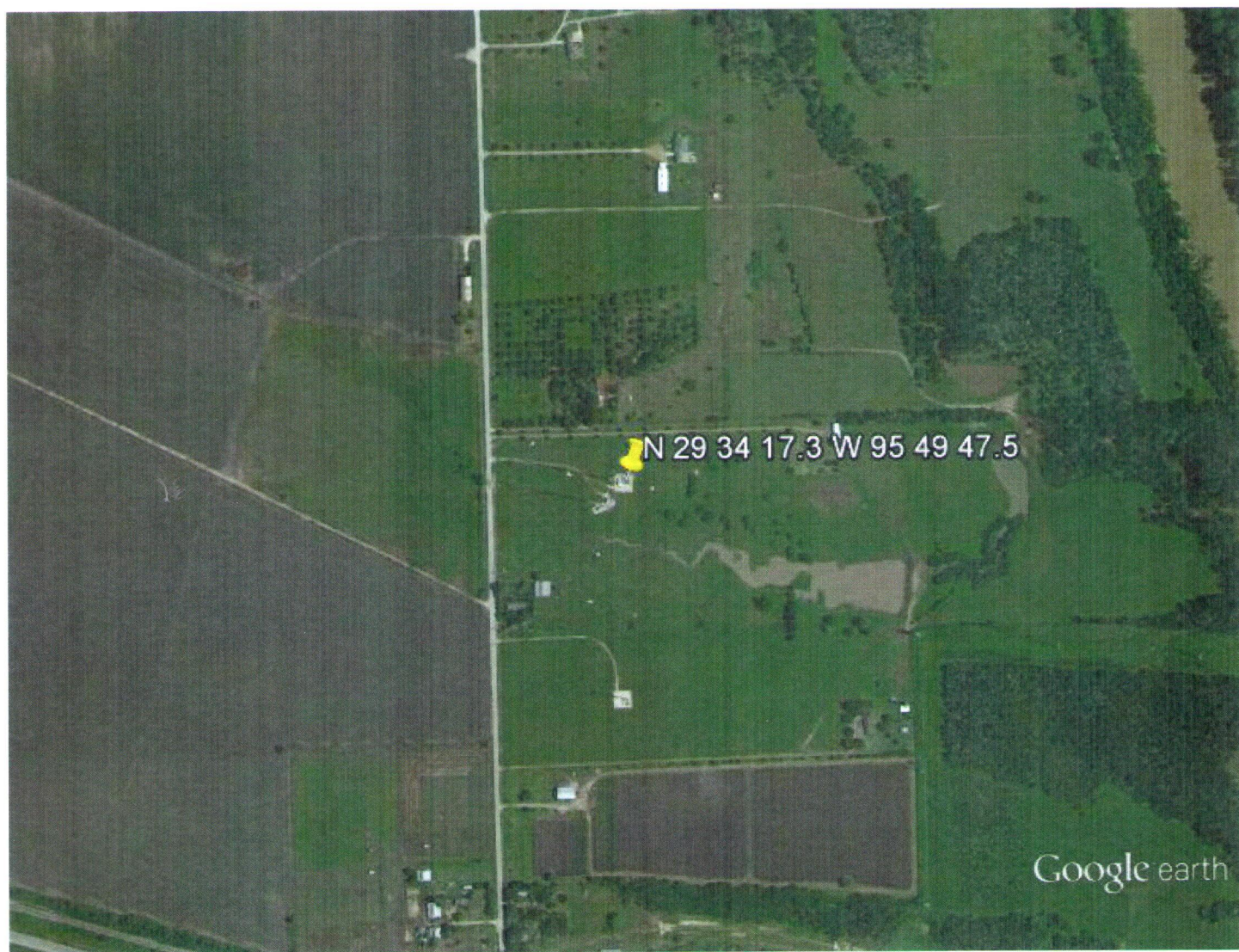
NOTE: Study point at ground (or rooftop, see write-up) level.

Worst-case relative field of 1.000 used for last examined point.

**RESULTS: COLUMN J DISTANCES ARE LESS THAN COLUMN C AND COLUMN K DISTANCES ARE LESS THAN COLUMN A DISTANCES IN ALL INSTANCES; THEREFORE, INTERFERRING SIGNAL DOES NOT EXIST AT ANY LOCATION (TWO METERS OR LESS ABOVE GROUND LEVEL)**



FIGURE EE5: AERIAL PHOTO OF ROSENBERG, TX, 291D SITE



Google earth

