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**ENGINEERING REPORT**

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**K291CE, Rosenberg, TX, Channel 291D FM Translator Minor Mod.**

**ENGINEERING STATEMENT**

Primera Iglesia Evangelica de Apostoles y Profetas ("Applicant") proposes this minor modification to K291CE to specify an omni-directional antenna. No other changes are proposed to the CP facilities of K291CE (BPFT-20130801AHD).

**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 KKCB-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 EE1 is the vertical plane relative field pattern for the proposed Jampro JLLP-5 five-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 8 meters.)

Attached as Figure EE2 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.)

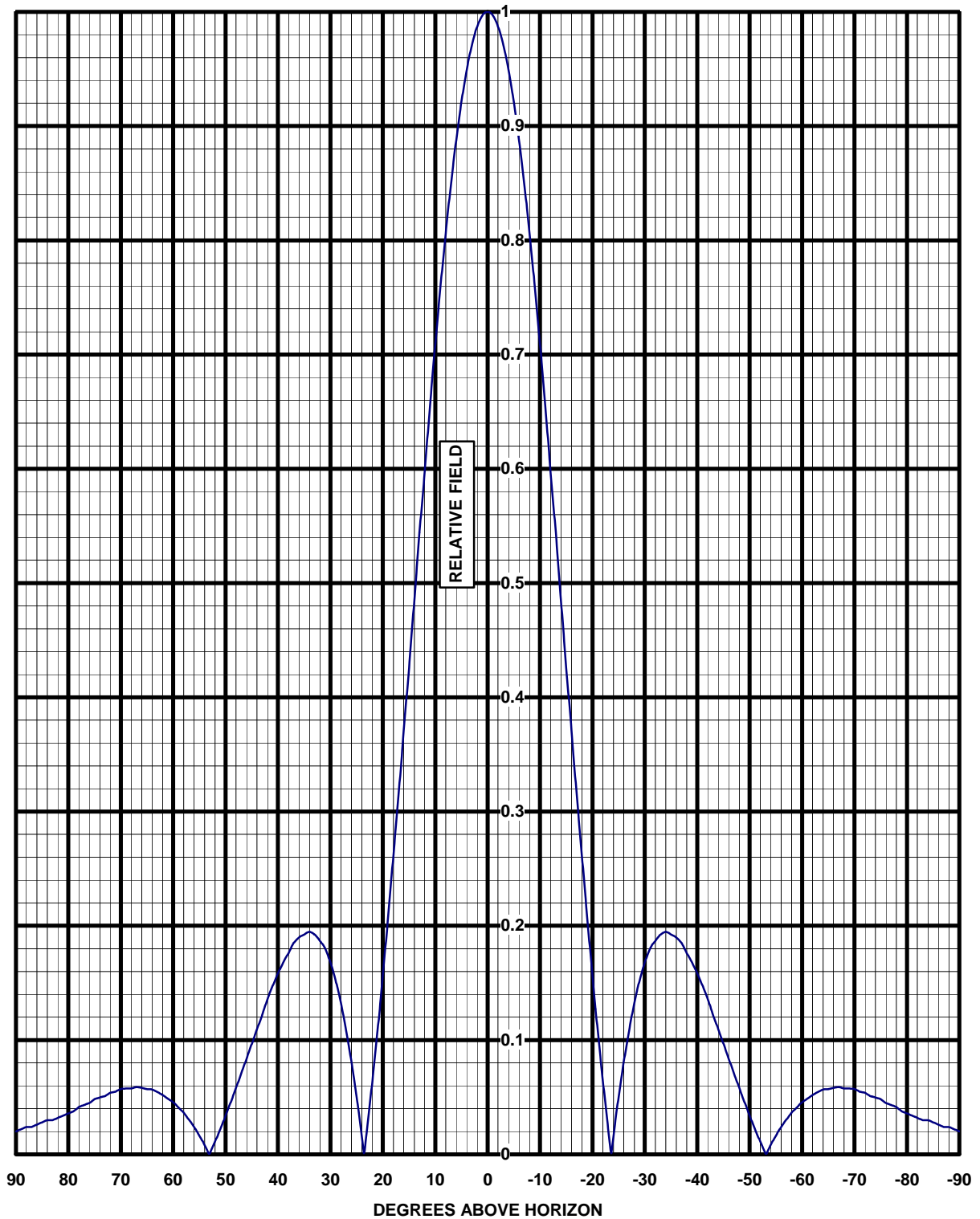
Figure EE3, attached, is an aerial photo of the proposed site. With the 8 meters of clearance shown by Figure EE2, no interference will result within 558 meters (the maximum potential interference distance) of the proposed site.

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



COMPUTED ELEVATION PATTERN

FIGURE EE1 (1 of 3)



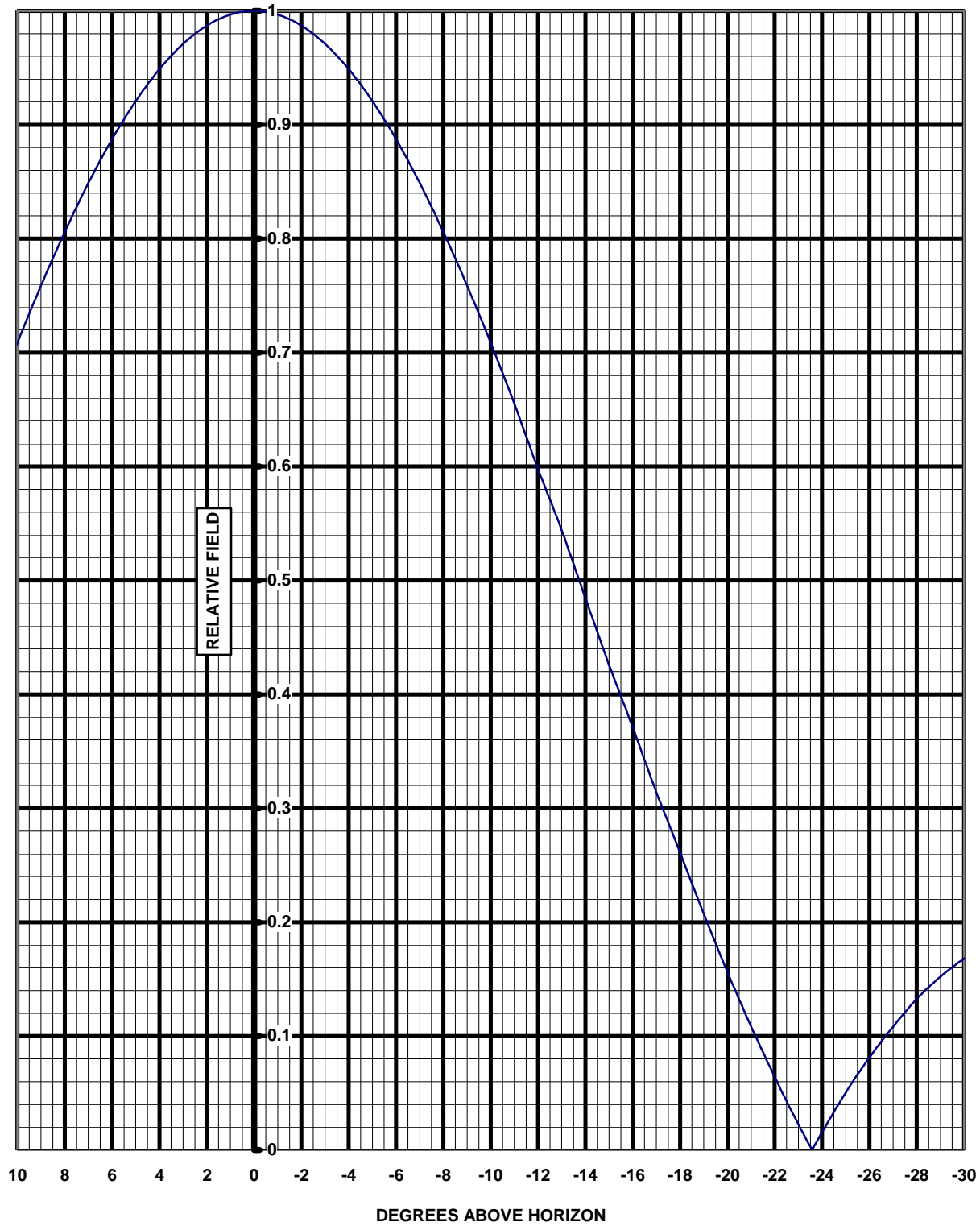
Frequency: 106.1 MHz

Model: JLLP-5 RFR.5  
Description: FM Sidemount Antenna  
**-0° Beam Tilt, 0% Null Fill**



COMPUTED ELEVATION PATTERN

FIGURE EE1 (2 of 3)



Frequency: 106.1 MHz

Model: JLLP-5 RFR.5  
Description: FM Sidemount Antenna  
**-0° Beam Tilt, 0% Null Fill**



## Elevation Pattern Tabulation

FIGURE EE1 (3 of 3)

### ELEVATION PATTERN TABULATION

#### RELATIVE FIELD VS ELEVATION ANGLE

<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>	<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>	<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>
10	0.709	-26	0.081	-61	0.049
9	0.759	-27	0.108	-62	0.052
8	0.806	-28	0.133	-63	0.055
7	0.849	-29	0.152	-64	0.057
6	0.887	-30	0.168	-65	0.057
5	0.921	-31	0.180	-66	0.058
4	0.949	-32	0.187	-67	0.059
3	0.971	-33	0.192	-68	0.058
2	0.987	-34	0.195	-69	0.058
1	0.997	-35	0.192	-70	0.057
0	1.000	-36	0.190	-71	0.055
-1	0.997	-37	0.185	-72	0.054
-2	0.987	-38	0.176	-73	0.051
-3	0.971	-39	0.168	-74	0.050
-4	0.949	-40	0.158	-75	0.048
-5	0.921	-41	0.148	-76	0.045
-6	0.887	-42	0.136	-77	0.043
-7	0.849	-43	0.122	-78	0.041
-8	0.806	-44	0.110	-79	0.038
-9	0.759	-45	0.097	-80	0.036
-10	0.709	-46	0.084	-81	0.034
-11	0.655	-47	0.071	-82	0.032
-12	0.597	-48	0.058	-83	0.030
-13	0.544	-49	0.046	-84	0.030
-14	0.485	-50	0.034	-85	0.028
-15	0.426	-51	0.022	-86	0.026
-16	0.371	-52	0.011	-87	0.024
-17	0.314	-53	0.001	-88	0.024
-18	0.261	-54	0.008	-89	0.022
-19	0.207	-55	0.016	-90	0.020
-20	0.156	-56	0.024		
-21	0.108	-57	0.030		
-22	0.064	-58	0.036		
-23	0.022	-59	0.041		
-24	0.016	-60	0.046		
-25	0.050				

Frequency: 106.1 MHz

Model: JLLP-5 RFR.5  
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## FIGURE EE2

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

PROJECT: ROSENBERG, TX, CHANNEL 291D

1-May-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>	0.020	106.0	<a href="#">20.00</a>	11.2	<a href="#">11.2</a>
2	79	10	79.6	<a href="#">82.8</a>	250	<a href="#">53.98</a>	0.032	106.0	<a href="#">24.08</a>	17.8	<a href="#">17.7</a>
3	79	20	81.5	<a href="#">75.8</a>	250	<a href="#">53.98</a>	0.048	106.0	<a href="#">27.60</a>	26.8	<a href="#">26.0</a>
4	79	30	84.5	<a href="#">69.2</a>	250	<a href="#">53.98</a>	0.058	106.0	<a href="#">29.25</a>	32.4	<a href="#">30.2</a>
5	79	40	88.5	<a href="#">63.1</a>	250	<a href="#">53.98</a>	0.057	106.0	<a href="#">29.10</a>	31.8	<a href="#">28.4</a>
6	79	50	93.5	<a href="#">57.7</a>	250	<a href="#">53.98</a>	0.036	106.0	<a href="#">25.11</a>	20.1	<a href="#">17.0</a>
7	79	70	105.6	<a href="#">48.5</a>	250	<a href="#">53.98</a>	0.058	106.0	<a href="#">29.25</a>	32.4	<a href="#">24.2</a>
8	79	90	119.8	<a href="#">41.3</a>	250	<a href="#">53.98</a>	0.148	106.0	<a href="#">37.38</a>	82.6	<a href="#">54.5</a>
9	79	120	143.7	<a href="#">33.4</a>	250	<a href="#">53.98</a>	0.195	106.0	<a href="#">39.78</a>	108.8	<a href="#">59.8</a>
10	79	150	169.5	<a href="#">27.8</a>	250	<a href="#">53.98</a>	0.133	106.0	<a href="#">36.46</a>	74.2	<a href="#">34.6</a>
11	79	200	215.0	<a href="#">21.6</a>	250	<a href="#">53.98</a>	0.108	106.0	<a href="#">34.65</a>	60.2	<a href="#">22.1</a>
12	79	250	262.2	<a href="#">17.5</a>	250	<a href="#">53.98</a>	0.314	106.0	<a href="#">43.92</a>	175.1	<a href="#">52.8</a>
13	79	300	310.2	<a href="#">14.8</a>	250	<a href="#">53.98</a>	0.485	106.0	<a href="#">47.69</a>	270.5	<a href="#">68.9</a>
14	79	400	407.7	<a href="#">11.2</a>	250	<a href="#">53.98</a>	0.655	106.0	<a href="#">50.30</a>	365.4	<a href="#">70.8</a>
15	79	500	506.2	<a href="#">9.0</a>	250	<a href="#">53.98</a>	0.759	106.0	<a href="#">51.58</a>	423.4	<a href="#">66.1</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 EE3: AERIAL PHOTO OF PROPOSED SITE  
ROSENBERG, TX



Google earth



558 meters