

**DELAWDER COMMUNICATIONS, INC.**

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

**ENGINEERING REPORT**

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**K247CP, Houston, TX, Channel 247D FM Translator Application**

**ENGINEERING STATEMENT**

All required protections are met by contour non-overlap pursuant to Section 74.1204, with the exception of protection to K245CQ, Houston, TX 245D (as licensed) and KBXX, Houston, TX 250C. K245CQ and KBXX are protected, as discussed below.

**PROTECTION TO K245CQ AND KBXX**

K245CQ 245D (10.2 kilometers at 117 degrees True from translator site) and KBXX 250C (19.3 kilometers at 188 degrees True from translator site) are second/third adjacent-channel stations to the proposed channel 247 translator facility. The 60 dBu F50,50 service contour of both K245CQ (as licensed) and KBXX extend beyond the 247D transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to K245CQ or KBXX.

Note that a rule waiver of Section 74.1204 for this second and 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 any station.

The F50,50 signal strength from K245CQ (as licensed) at the proposed 247D transmitter site is greater than 63 dBu (the “desired” signal of K245CQ). (Not that the CP facility BPFT-20170717AAH’s 60 dBu contour does not overlap with the proposed 247D transmitter site; and the CP facility of K245CQ is fully protected.) The F50,50 signal strength from KBXX at the proposed 247D transmitter site is greater than 94 dBu (the “desired” signal of KBXX). The second/third adjacent-channel protection is an undesired-to-desired (“U/D”) dB signal strength ratio of 40:1. Therefore, predicted interference to K245CQ or KBXX is a 247D signal of greater than or equal to 103 dBu.

The 103 dBu signal based on a free space field determination is predicted to extend out to 788 meters from the proposed 247D transmitter antenna. Figures EE1 and EE2, attached, are aerial photos of the proposed site and surrounding area that show: (a) the antenna will be mounted at the very western point of the roof-top of the building (at 5847 San Felipe); and (b) there are no tall buildings within 788 meters to the West of the proposed antenna where the Scala CL-FM antenna will serve.

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Attached is a vertical plane pattern of the proposed Scala CL-FM(H) three-bay (half-wave spaced) antenna. Also attached is a table with the results of a Section 74.1204 analysis (using the FCC-requested spreadsheet). From the tabulation, the possible 103 dBu contours extends no closer than 38 meters above ground level within the study distance of 788 meters. The tallest building to the West of the transmitter site and within 788 meters of the building is 37 meters tall. Therefore, all buildings within the target study distance of 788 meters are fully protected.

**The three-bay antenna will be installed to extend one foot over the edge of the building on the western edge of the building.** The relative field of the Scala CL-FM antenna extending over the building will be 0.01 in all such vertical azimuths. The 103 dBu FSL signal will extend to a maximum distance of 8 meters in any direction on the building. Since the highest floor of the building is at least 18 meters below the proposed antenna, no persons on the building will be impacted.

Therefore, pursuant to Section 74.1204(d) of the FCC Rules, K245CQ and KBXX are adequately protected by the proposed facility.



# EE1 MAP

Proposed Site

N-29 44 57 W 95 28 56

Google Earth

© 2013 Google

900 ft





# EE2 MAP

Proposed Site

N 29 44 57 W 95 28 56

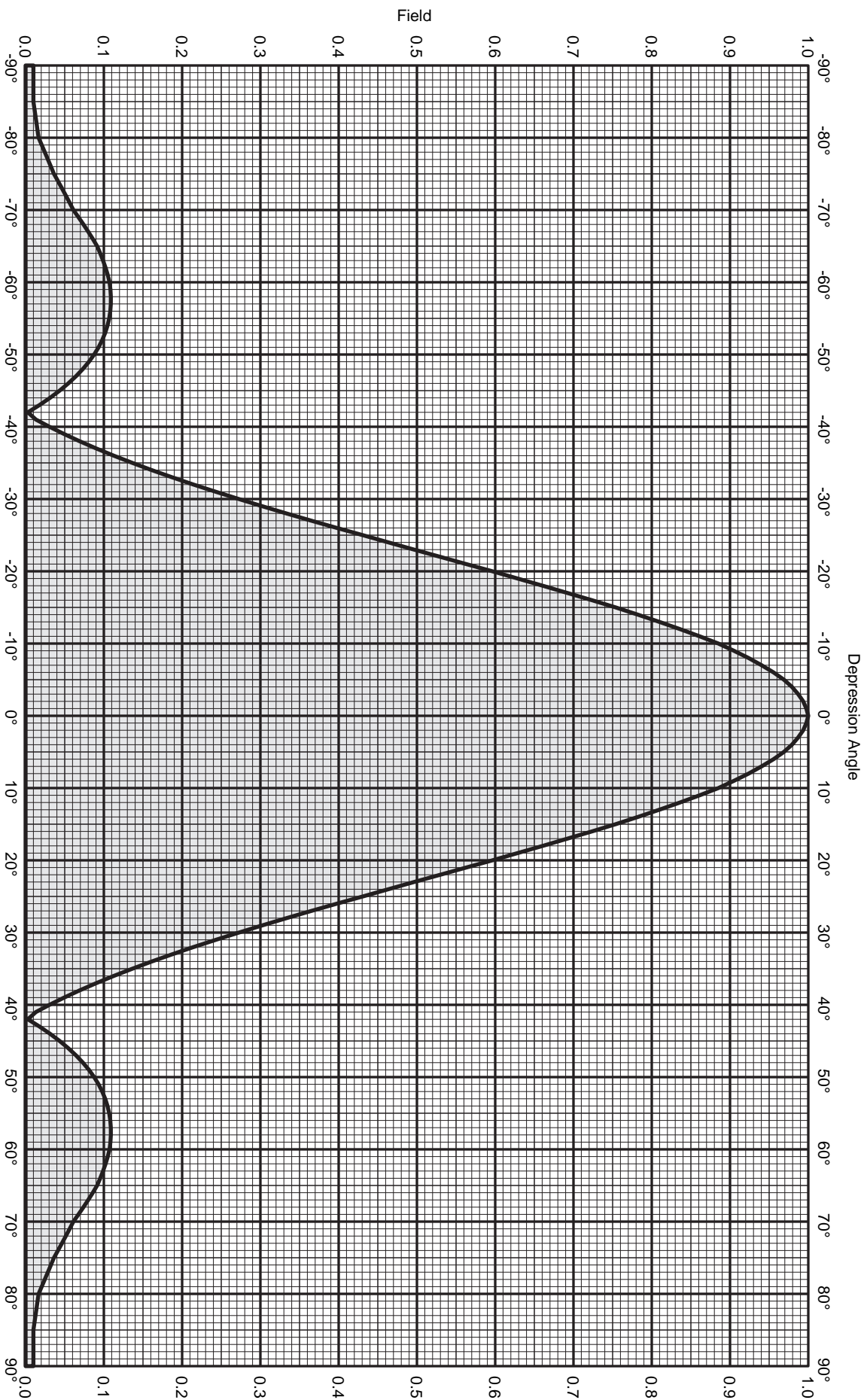
Google Earth

© 2013 Google



1000 ft





**KATHREIN**  
**SCALA DIVISION**

Post Office Box 4580  
Medford, OR 97501 (USA)  
Phone: (541) 779-6500  
Fax: (541) 779-3991  
<http://www.kathrein-scala.com>

Three bay CL-FM/HRM/50N Array

Frequency: 107.1 MHz

Gain: 10.9 dBi (x 12.3)

Horizontal Polarization

Vertical stacked 0.5 wavelength

Vertical plane Pattern



Three bay CL-FM/HRM/50N Array

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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	-29.10	0.00	-45	0.043	-27.23	-16.33	0.02
-89	0.010	-40.00	-29.10	0.00	-44	0.031	-30.11	-19.21	0.01
-88	0.010	-40.00	-29.10	0.00	-43	0.018	-35.04	-24.14	0.00
-87	0.010	-40.00	-29.10	0.00	-42	0.010	-40.00	-29.10	0.00
-86	0.010	-40.00	-29.10	0.00	-41	0.013	-37.63	-26.73	0.00
-85	0.010	-40.00	-29.10	0.00	-40	0.031	-30.31	-19.41	0.01
-84	0.011	-38.92	-28.02	0.00	-39	0.049	-26.16	-15.26	0.03
-83	0.013	-37.95	-27.05	0.00	-38	0.069	-23.22	-12.32	0.06
-82	0.014	-37.09	-26.19	0.00	-37	0.090	-20.89	-9.99	0.10
-81	0.015	-36.30	-25.40	0.00	-36	0.113	-18.96	-8.06	0.16
-80	0.017	-35.58	-24.68	0.00	-35	0.136	-17.30	-6.40	0.23
-79	0.021	-33.72	-22.82	0.01	-34	0.161	-15.85	-4.95	0.32
-78	0.025	-32.20	-21.30	0.01	-33	0.187	-14.54	-3.64	0.43
-77	0.028	-30.91	-20.01	0.01	-32	0.215	-13.37	-2.47	0.57
-76	0.032	-29.79	-18.89	0.01	-31	0.243	-12.28	-1.38	0.73
-75	0.036	-28.81	-17.91	0.02	-30	0.273	-11.29	-0.39	0.91
-74	0.041	-27.66	-16.76	0.02	-29	0.303	-10.38	0.52	1.13
-73	0.046	-26.66	-15.76	0.03	-28	0.333	-9.54	1.36	1.37
-72	0.051	-25.78	-14.88	0.03	-27	0.365	-8.75	2.15	1.64
-71	0.056	-24.99	-14.09	0.04	-26	0.398	-8.01	2.89	1.95
-70	0.061	-24.28	-13.38	0.05	-25	0.431	-7.31	3.59	2.28
-69	0.068	-23.40	-12.50	0.06	-24	0.464	-6.68	4.22	2.64
-68	0.074	-22.62	-11.72	0.07	-23	0.496	-6.08	4.82	3.03
-67	0.080	-21.93	-11.03	0.08	-22	0.530	-5.52	5.38	3.45
-66	0.086	-21.32	-10.42	0.09	-21	0.563	-4.99	5.91	3.90
-65	0.091	-20.78	-9.88	0.10	-20	0.596	-4.49	6.41	4.38
-64	0.095	-20.41	-9.51	0.11	-19	0.629	-4.03	6.87	4.86
-63	0.099	-20.09	-9.19	0.12	-18	0.661	-3.60	7.30	5.37
-62	0.102	-19.81	-8.91	0.13	-17	0.692	-3.19	7.71	5.90
-61	0.105	-19.58	-8.68	0.14	-16	0.724	-2.81	8.09	6.44
-60	0.107	-19.39	-8.49	0.14	-15	0.754	-2.45	8.45	6.99
-59	0.108	-19.30	-8.40	0.14	-14	0.782	-2.13	8.77	7.53
-58	0.109	-19.26	-8.36	0.15	-13	0.810	-1.83	9.07	8.07
-57	0.109	-19.26	-8.36	0.15	-12	0.836	-1.56	9.34	8.60
-56	0.108	-19.31	-8.41	0.14	-11	0.861	-1.30	9.60	9.13
-55	0.107	-19.42	-8.52	0.14	-10	0.885	-1.06	9.84	9.64
-54	0.105	-19.61	-8.71	0.13	-9	0.905	-0.87	10.03	10.08
-53	0.102	-19.85	-8.95	0.13	-8	0.924	-0.69	10.21	10.50
-52	0.098	-20.18	-9.28	0.12	-7	0.940	-0.53	10.37	10.88
-51	0.093	-20.61	-9.71	0.11	-6	0.956	-0.39	10.51	11.24
-50	0.088	-21.15	-10.25	0.09	-5	0.969	-0.28	10.62	11.55
-49	0.081	-21.83	-10.93	0.08	-4	0.979	-0.18	10.72	11.79
-48	0.073	-22.71	-11.81	0.07	-3	0.987	-0.11	10.79	11.99
-47	0.064	-23.81	-12.91	0.05	-2	0.994	-0.06	10.84	12.14
-46	0.055	-25.27	-14.37	0.04	-1	0.997	-0.02	10.88	12.24
					0	1.000	0.00	10.90	12.30



Three bay CL-FM/HRM/50N Array

Frequency: 107.1 MHz

Gain: 10.9 dBd (x 12.3)

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	10.90	12.30	45	0.043	-27.23	-16.33	0.02
1	0.997	-0.02	10.88	12.24	46	0.055	-25.27	-14.37	0.04
2	0.994	-0.06	10.84	12.14	47	0.064	-23.81	-12.91	0.05
3	0.987	-0.11	10.79	11.99	48	0.073	-22.71	-11.81	0.07
4	0.979	-0.18	10.72	11.79	49	0.081	-21.83	-10.93	0.08
5	0.969	-0.28	10.62	11.55	50	0.088	-21.15	-10.25	0.09
6	0.956	-0.39	10.51	11.24	51	0.093	-20.61	-9.71	0.11
7	0.940	-0.53	10.37	10.88	52	0.098	-20.18	-9.28	0.12
8	0.924	-0.69	10.21	10.50	53	0.102	-19.85	-8.95	0.13
9	0.905	-0.87	10.03	10.08	54	0.105	-19.61	-8.71	0.13
10	0.885	-1.06	9.84	9.64	55	0.107	-19.42	-8.52	0.14
11	0.861	-1.30	9.60	9.13	56	0.108	-19.31	-8.41	0.14
12	0.836	-1.56	9.34	8.60	57	0.109	-19.26	-8.36	0.15
13	0.810	-1.83	9.07	8.07	58	0.109	-19.26	-8.36	0.15
14	0.782	-2.13	8.77	7.53	59	0.108	-19.30	-8.40	0.14
15	0.754	-2.45	8.45	6.99	60	0.107	-19.39	-8.49	0.14
16	0.724	-2.81	8.09	6.44	61	0.105	-19.58	-8.68	0.14
17	0.692	-3.19	7.71	5.90	62	0.102	-19.81	-8.91	0.13
18	0.661	-3.60	7.30	5.37	63	0.099	-20.09	-9.19	0.12
19	0.629	-4.03	6.87	4.86	64	0.095	-20.41	-9.51	0.11
20	0.596	-4.49	6.41	4.38	65	0.091	-20.78	-9.88	0.10
21	0.563	-4.99	5.91	3.90	66	0.086	-21.32	-10.42	0.09
22	0.530	-5.52	5.38	3.45	67	0.080	-21.93	-11.03	0.08
23	0.496	-6.08	4.82	3.03	68	0.074	-22.62	-11.72	0.07
24	0.464	-6.68	4.22	2.64	69	0.068	-23.40	-12.50	0.06
25	0.431	-7.31	3.59	2.28	70	0.061	-24.28	-13.38	0.05
26	0.398	-8.01	2.89	1.95	71	0.056	-24.99	-14.09	0.04
27	0.365	-8.75	2.15	1.64	72	0.051	-25.78	-14.88	0.03
28	0.333	-9.54	1.36	1.37	73	0.046	-26.66	-15.76	0.03
29	0.303	-10.38	0.52	1.13	74	0.041	-27.66	-16.76	0.02
30	0.273	-11.29	-0.39	0.91	75	0.036	-28.81	-17.91	0.02
31	0.243	-12.28	-1.38	0.73	76	0.032	-29.79	-18.89	0.01
32	0.215	-13.37	-2.47	0.57	77	0.028	-30.91	-20.01	0.01
33	0.187	-14.54	-3.64	0.43	78	0.025	-32.20	-21.30	0.01
34	0.161	-15.85	-4.95	0.32	79	0.021	-33.72	-22.82	0.01
35	0.136	-17.30	-6.40	0.23	80	0.017	-35.58	-24.68	0.00
36	0.113	-18.96	-8.06	0.16	81	0.015	-36.30	-25.40	0.00
37	0.090	-20.89	-9.99	0.10	82	0.014	-37.09	-26.19	0.00
38	0.069	-23.22	-12.32	0.06	83	0.013	-37.95	-27.05	0.00
39	0.049	-26.16	-15.26	0.03	84	0.011	-38.92	-28.02	0.00
40	0.031	-30.31	-19.41	0.01	85	0.010	-40.00	-29.10	0.00
41	0.013	-37.62	-26.72	0.00	86	0.010	-40.00	-29.10	0.00
42	0.010	-40.00	-29.10	0.00	87	0.010	-40.00	-29.10	0.00
43	0.018	-35.04	-24.14	0.00	88	0.010	-40.00	-29.10	0.00
44	0.031	-30.11	-19.21	0.01	89	0.010	-40.00	-29.10	0.00
					90	0.010	-40.00	-29.10	0.00

74.1204(d) Showing

K247CP, Houston, TX 247D

ERP (kw) 0.25  
Height of Antenna above Ground (m) 199  
Translator's IX Contour 103  
Scala CL-FM(H 3-bay HW)

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1	0.2500	785.1814	199.000
5	0.969	0.2347	760.8408	132.688
10	0.885	0.1958	694.8855	78.334
15	0.754	0.1421	592.0268	45.772
20	0.596	0.0888	467.9681	38.945
25	0.431	0.0464	338.4132	55.980
30	0.273	0.0186	214.3545	91.823
35	0.136	0.0046	106.7847	137.751
40	0.031	0.0002	24.3406	183.354
45	0.043	0.0005	33.7628	175.126
50	0.088	0.0019	69.0960	146.069
55	0.107	0.0029	84.0144	130.179
60	0.107	0.0029	84.0144	126.241
65	0.091	0.0021	71.4515	134.243
70	0.061	0.0009	47.8961	153.992
75	0.036	0.0003	28.2665	171.697
80	0.017	0.0001	13.3481	185.855
85	0.01	0.0000	7.8518	191.178
90	0.01	0.0000	7.8518	191.148

**Note: Input the ERP, Height of the antenna above Ground, the Calculated Translator IX contour, and the specified Antenna Relative Field Pat**