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ENGINEERING REPORT

K248CJ, Sugar Land, TX, Channel 248D 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 KBXX, Houston, TX, 250C (protected, as discussed below).

PROTECTION TO KBXX

KBXX 250C (78.2 kilometers at 116 degrees True from translator site) is a second adjacent-channel station to the proposed channel 286D facility. The 60 dBu F50,50 service contour of this station extends beyond the proposed 248D transmitter site. Using the well-established *Living Way Ministries* Methodology, no actual interference to any population is predicted to exist to KBXX.

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 any station.

The F50,50 signal strength from KBXX at the proposed 248D transmitter site is 67 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 KBXX from the proposed 248D facility is a signal of greater than or equal to 107 dBu.

Figure EE1 is the vertical plane relative field pattern for the proposed Scala CA5-FM/CP (two stacked bays separated by 0.87 wavelength) antenna. By adjusting for the vertical plane downward relative field values of the proposed antenna, it is herein demonstrated that the 107 dBu interfering signal (using a free space field determination) does not exist at any point a ground level. (Actually, the study is made to 2 meters above ground level to account for a person's height.)

Attached as Figure EE2 is a tabulation of various points (at 2 meters above 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 2 meters any point.) The clearance is at least 24 meters in all cases. Therefore, pursuant to Section 74.1204(d) of the FCC Rules, KBXX is adequately protected by the proposed facility.

KATHREIN
SCALA DIVISION

Two CA5-FM/CP/RM/50N Yagi Antennas   Vertical stacked 0.87 wavelength

Frequency: 103.7 MHz   Vertical plane Pattern

Gain: 8.5 dBd (x 7.07)

Circular Polarization

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	8.50	7.08	45	0.150	-16.49	-7.99	0.16
1	0.995	-0.04	8.46	7.01	46	0.156	-16.15	-7.65	0.17
2	0.988	-0.10	8.40	6.92	47	0.160	-15.91	-7.41	0.18
3	0.979	-0.18	8.32	6.79	48	0.163	-15.76	-7.26	0.19
4	0.968	-0.28	8.22	6.63	49	0.164	-15.68	-7.18	0.19
5	0.955	-0.40	8.10	6.45	50	0.164	-15.68	-7.18	0.19
6	0.937	-0.57	7.93	6.21	51	0.164	-15.68	-7.18	0.19
7	0.917	-0.75	7.75	5.95	52	0.163	-15.75	-7.25	0.19
8	0.895	-0.96	7.54	5.68	53	0.161	-15.88	-7.38	0.18
9	0.872	-1.19	7.31	5.38	54	0.157	-16.07	-7.57	0.18
10	0.847	-1.44	7.06	5.08	55	0.153	-16.32	-7.82	0.17
11	0.819	-1.73	6.77	4.75	56	0.151	-16.44	-7.94	0.16
12	0.790	-2.05	6.45	4.42	57	0.148	-16.60	-8.10	0.15
13	0.759	-2.39	6.11	4.08	58	0.144	-16.80	-8.30	0.15
14	0.728	-2.76	5.74	3.75	59	0.140	-17.05	-8.55	0.14
15	0.695	-3.16	5.34	3.42	60	0.136	-17.34	-8.84	0.13
16	0.660	-3.61	4.89	3.08	61	0.132	-17.60	-9.10	0.12
17	0.624	-4.09	4.41	2.76	62	0.127	-17.90	-9.40	0.11
18	0.588	-4.61	3.89	2.45	63	0.122	-18.24	-9.74	0.11
19	0.551	-5.17	3.33	2.15	64	0.117	-18.62	-10.12	0.10
20	0.514	-5.77	2.73	1.87	65	0.112	-19.05	-10.55	0.09
21	0.475	-6.47	2.03	1.60	66	0.112	-19.02	-10.52	0.09
22	0.436	-7.21	1.29	1.34	67	0.112	-18.99	-10.49	0.09
23	0.397	-8.02	0.48	1.12	68	0.113	-18.97	-10.47	0.09
24	0.359	-8.90	-0.40	0.91	69	0.113	-18.97	-10.47	0.09
25	0.321	-9.86	-1.36	0.73	70	0.113	-18.97	-10.47	0.09
26	0.284	-10.93	-2.43	0.57	71	0.114	-18.87	-10.37	0.09
27	0.248	-12.12	-3.62	0.43	72	0.115	-18.78	-10.28	0.09
28	0.213	-13.45	-4.95	0.32	73	0.116	-18.69	-10.19	0.10
29	0.179	-14.96	-6.46	0.23	74	0.117	-18.61	-10.11	0.10
30	0.146	-16.73	-8.23	0.15	75	0.118	-18.54	-10.04	0.10
31	0.114	-18.88	-10.38	0.09	76	0.120	-18.39	-9.89	0.10
32	0.083	-21.58	-13.08	0.05	77	0.122	-18.26	-9.76	0.11
33	0.055	-25.26	-16.76	0.02	78	0.124	-18.13	-9.63	0.11
34	0.027	-31.23	-22.73	0.01	79	0.126	-18.00	-9.50	0.11
35	0.010	-40.00	-31.50	0.00	80	0.128	-17.89	-9.39	0.12
36	0.022	-33.27	-24.77	0.00	81	0.130	-17.75	-9.25	0.12
37	0.044	-27.23	-18.73	0.01	82	0.131	-17.62	-9.12	0.12
38	0.063	-23.95	-15.45	0.03	83	0.133	-17.50	-9.00	0.13
39	0.082	-21.78	-13.28	0.05	84	0.135	-17.38	-8.88	0.13
40	0.098	-20.20	-11.70	0.07	85	0.137	-17.26	-8.76	0.13
41	0.112	-19.03	-10.53	0.09	86	0.139	-17.16	-8.66	0.14
42	0.124	-18.13	-9.63	0.11	87	0.140	-17.07	-8.57	0.14
43	0.134	-17.43	-8.93	0.13	88	0.142	-16.98	-8.48	0.14
44	0.143	-16.89	-8.39	0.14	89	0.143	-16.89	-8.39	0.14
					90	0.144	-16.81	-8.31	0.15

FIGURE EE2
FREE SPACE FIELD STRENGTH AT A DISTANCE STUDY RESULTS

PROJECT: SEALY, TX, CHANNEL 248D   1-Mar-17

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	117	0.1	**117.0**	90.0	250	53.98	0.144	107.0	37.15	71.6	71.6
2	117	20	**118.7**	80.3	250	53.98	0.130	107.0	36.26	64.6	63.7
3	117	40	**123.6**	71.1	250	53.98	0.115	107.0	35.19	57.2	54.1
4	117	70	**136.3**	59.1	250	53.98	0.140	107.0	36.90	69.6	59.7
5	117	100	**153.9**	49.5	250	53.98	0.164	107.0	38.28	81.5	62.0
6	117	140	**182.5**	39.9	250	53.98	0.098	107.0	33.80	48.7	31.2
7	117	180	**214.7**	33.0	250	53.98	0.055	107.0	28.79	27.3	14.9
8	117	220	**249.2**	28.0	250	53.98	0.213	107.0	40.55	105.9	49.7
9	117	260	**285.1**	24.2	250	53.98	0.359	107.0	45.08	178.5	73.2
10	117	300	**322.0**	21.3	250	53.98	0.475	107.0	47.51	236.1	85.8
11	117	340	**359.6**	19.0	250	53.98	0.551	107.0	48.80	273.9	89.1
12	117	380	**397.6**	17.1	250	53.98	0.624	107.0	49.88	310.2	91.3
13	117	420	**436.0**	15.6	250	53.98	0.695	107.0	50.82	345.5	92.7
14	117	460	**474.6**	14.3	250	53.98	0.728	107.0	51.22	361.9	89.2
15	117	498	**511.6**	13.2	250	53.98	0.759	107.0	51.58	377.3	86.3

NOTE: Study point at 2 meters above ground (or rooftop, see write-up) level.

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)