Second Adjacent Channel Waiver Request

Applicant requests a waiver of the second adjacent minimum spacing requirements stated in §73.807 of the FCC rules using U/D zero population inference protocol ("Living Way" Waiver). At the proposed facility site, second adjacent channels and KGMZ and KOIT have signal strengths of 78 dBu and 93 dBu.

Using U/D methodology, at the proposed transmitter location, KGMZ (the lesser signal value used here) has a signal strength of 78 dBu. Interference will occur when the interfering signal exceeds the desired signal by 40 dbu. So the area of predicted interference would then be bounded by the 118 dBu contour. The distance to this contour, using free space method:

$D = (7.01*P1/2)/E$, where P is power (watts), E is field strength (v/m), and D is distance to contour (meters):

Minimum LPFM wattage of 50 watts requested

P = 50 w, E = 118 dBu
D = 62.4 meters

However, the field strength of the proposed LPFM's antenna system falls quickly at depression angles below the horizon. Using elevation pattern data provided by Nicom (4 bay 0.85 spaced BKG77 antenna, specification validation at the Nicom website http://www.nicomusa.com/bkg77) for a 0.85 wave spaced antenna, the distance to the 118 dBu contour at various depression angles is tabulated below. The data shows that the lowest point at which the signal strength rises to 118 dBu is 7.6 meters below the center of radiation of the antenna system, or 5 meters above the ground. Therefore, this is sufficient clearance, and the interference area encompasses zero population. The table below show that the lowest elevation point of the 118 dBu F(50,10) interfering contour is 65meters above the ground.

Thus, the applicant requests second adjacent waiver based upon evidence no interference is proposed.

12.6 meters above ground

A MAX ERP
B DEPRESSION ANGLE BELOW HORIZON
C RELATIVE FIELD
D dB FROM RELATIVE
E ERP
F ANGULAR DISTANCE TO 110.8 dBu CONTOUR
G VERTICAL DISTANCE (below antenna)
H HORIZONTAL DISTANCE TO 110.8 dBu CONTOUR
I CLEARENCE OF CONTOUR ABOVE GROUND

A	B	C	D	E	F	G	H	I
50	0	1	0.000	50.00	62.4	0	62.4	12.1
50	0.5	0.998	-0.017	49.80	62.2	0.5	62.1	11.6
50	1	0.994	-0.052	49.40	62	1	61.9	11

50	1.5	0.987	-0.114	48.71	61.5	1.6	61.4	10.5
50	2	0.977	-0.202	47.73	60.9	2.1	60.8	10
50	2.5	0.964	-0.318	46.46	60.1	2.6	60	9.6
50	3	0.949	-0.455	45.03	59.2	3	59.1	9.1
50	3.5	0.931	-0.621	43.34	58	3.5	57.8	8.7
50	4	0.911	-0.810	41.50	56.8	3.9	56.6	8.3
50	4.5	0.888	-1.032	39.43	55.4	4.3	55.2	8
50	5	0.863	-1.280	37.24	53.8	4.6	53.5	7.7
50	5.5	0.836	-1.556	34.94	52.1	4.9	51.8	7.4
50	6	0.806	-1.873	32.48	50.2	5.2	49.9	7.2
50	6.5	0.775	-2.214	30.03	48.3	5.4	47.9	7
50	7	0.742	-2.592	27.53	46.3	5.6	45.9	6.9
50	7.5	0.707	-3.012	24.99	44.1	5.7	43.7	6.8
50	8	0.671	-3.466	22.51	41.8	5.8	41.3	6.8
50	8.5	0.634	-3.958	20.10	39.5	5.8	39	6.8
50	9	0.596	-4.495	17.76	37.1	5.8	36.6	6.9
50	9.5	0.557	-5.083	15.51	34.7	5.7	34.2	7.1
50	10	0.517	-5.730	13.36	32.2	5.5	31.7	7.2
50	10.5	0.476	-6.448	11.33	29.7	5.4	29.2	7.5
50	11	0.434	-7.250	9.42	27	5.1	26.5	7.8
50	11.5	0.393	-8.112	7.72	24.5	4.8	24	8.1
50	12	0.352	-9.069	6.20	21.9	4.5	21.4	8.5
50	12.5	0.311	-10.145	4.84	19.4	4.1	18.9	8.9
50	13	0.271	-11.341	3.67	16.9	3.7	16.4	9.3
50	13.5	0.231	-12.728	2.67	14.4	3.3	14	9.7
50	14	0.193	-14.289	1.86	12	2.9	11.6	10.2
50	14.5	0.155	-16.193	1.20	9.6	2.4	9.2	10.8
50	15	0.118	-18.562	0.70	7.3	1.8	7	11.3
50	15.5	0.083	-21.618	0.34	5.1	1.3	4.9	11.8
50	16	0.049	-26.196	0.12	3	0.8	2.8	12.4
50	16.5	0.017	-35.391	0.01	1	0.2	0.9	12.4
50	17	0.014	-37.077	0.01	0.8	0.2	0.7	11.9
50	17.5	0.043	-27.331	0.09	2.6	0.7	2.4	11.3
50	18	0.071	-22.975	0.25	4.4	1.3	4.1	10.8
50	18.5	0.096	-20.355	0.46	5.9	1.8	5.5	10.2
50	19	0.119	-18.489	0.71	7.4	2.4	6.9	9.7
50	19.5	0.141	-17.016	0.99	8.7	2.9	8.2	9.2
50	20	0.161	-15.863	1.30	10	3.4	9.3	8.8
50	20.5	0.178	-14.992	1.58	11.1	3.8	10.3	8.4
50	21	0.193	-14.289	1.86	12	4.2	11.2	8
50	21.5	0.206	-13.723	2.12	12.8	4.6	11.9	7.6
50	22	0.217	-13.271	2.35	13.5	5	12.5	7.3
50	22.5	0.226	-12.918	2.55	14.1	5.3	13	7
50	23	0.233	-12.653	2.71	14.5	5.6	13.3	6.7
50	23.5	0.239	-12.432	2.86	14.9	5.9	13.6	6.5
50	24	0.242	-12.324	2.93	15.1	6.1	13.7	6.4
50	24.5	0.243	-12.288	2.95	15.1	6.2	13.7	6.3
50	25	0.243	-12.288	2.95	15.1	6.3	13.6	6.2
50	25.5	0.241	-12.360	2.90	15	6.4	13.5	6.2
50	26	0.237	-12.505	2.81	14.7	6.4	13.2	6.2
50	26.5	0.232	-12.690	2.69	14.4	6.4	12.8	6.3
50	27	0.225	-12.956	2.53	14	6.3	12.4	6.4
50	27.5	0.217	-13.271	2.35	13.5	6.2	11.9	6.6
50	28	0.208	-13.639	2.16	12.9	6	11.3	6.8
50	28.5	0.198	-14.067	1.96	12.3	5.8	10.8	7
50	29	0.186	-14.610	1.73	11.6	5.6	10.1	7.3
50	29.5	0.174	-15.189	1.51	10.8	5.3	9.4	7.7
50	30	0.161	-15.863	1.30	10	4.9	8.6	8
50	30.5	0.147	-16.654	1.08	9.1	4.6	7.8	8.4
50	31	0.132	-17.589	0.87	8.2	4.2	7	8.8
50	31.5	0.117	-18.636	0.68	7.3	3.8	6.2	9.3
50	32	0.102	-19.828	0.52	6.3	3.3	5.3	9.8
50	32.5	0.086	-21.310	0.37	5.3	2.8	4.4	10.3

50	33	0.07	-23.0980.25	4.3	2.3	3.6	10.8
50	33.5	0.054	-25.3520.15	3.3	1.8	2.7	11.4
50	34	0.038	-28.4040.07	2.3	1.2	1.9	11.9
50	34.5	0.023	-32.7650.03	1.4	0.7	1.1	12.4
50	35	0.007	-43.0980.00	0.4	0.2	0.3	12.4
50	35.5	0.008	-41.9380.00	0.4	0.2	0.3	11.8
50	36	0.023	-32.7650.03	1.4	0.8	1.1	11.3
50	36.5	0.037	-28.6360.07	2.3	1.3	1.8	10.8
50	37	0.051	-25.8490.13	3.1	1.8	2.4	10.3
50	37.5	0.064	-23.8760.20	3.9	2.3	3	9.7
50	38	0.077	-22.2700.30	4.8	2.9	3.7	9.2
50	38.5	0.089	-21.0120.40	5.5	3.4	4.3	8.7
50	39	0.1	-20.0000.50	6.2	3.9	4.8	8.3
50	39.5	0.111	-19.0940.62	6.9	4.3	5.3	7.9
50	40	0.12	-18.4160.72	7.4	4.7	5.6	7.5
50	40.5	0.129	-17.7880.83	8	5.1	6	7.1
50	41	0.137	-17.2660.94	8.5	5.5	6.4	6.8
50	41.5	0.144	-16.8331.04	8.9	5.8	6.6	6.4
50	42	0.15	-16.4781.13	9.3	6.2	6.9	6.1
50	42.5	0.156	-16.1381.22	9.7	6.5	7.1	5.9
50	43	0.16	-15.9181.28	9.9	6.7	7.2	5.6
50	43.5	0.164	-15.7031.34	10.2	7	7.4	5.4
50	44	0.167	-15.5461.39	10.4	7.2	7.4	5.3
50	44.5	0.169	-15.4421.43	10.5	7.3	7.4	5.2
50	45	0.17	-15.3911.45	10.6	7.4	7.4	5.1
50	45.5	0.17	-15.3911.45	10.6	7.5	7.4	5
50	46	0.17	-15.3911.45	10.6	7.6	7.3	5
50	46.5	0.169	-15.4421.43	10.5	7.6	7.2	5
50	47	0.167	-15.5461.39	10.4	7.6	7	5.1
50	47.5	0.165	-15.6501.36	10.2	7.5	6.8	5.1
50	48	0.162	-15.8101.31	10.1	7.5	6.7	5.3
50	48.5	0.158	-16.0271.25	9.8	7.3	6.4	5.4
50	49	0.154	-16.2501.19	9.6	7.2	6.3	5.7
50	49.5	0.149	-16.5361.11	9.2	6.9	5.9	5.8
50	50	0.144	-16.8331.04	8.9	6.8	5.7	6
50	50.5	0.138	-17.2020.95	8.6	6.6	5.4	6.3
50	51	0.133	-17.5230.88	8.2	6.3	5.1	6.5
50	51.5	0.126	-17.9930.79	7.8	6.1	4.8	6.8
50	52	0.12	-18.4160.72	7.4	5.8	4.5	7.1
50	52.5	0.113	-18.9380.64	7	5.5	4.2	7.4
50	53	0.106	-19.4940.56	6.6	5.2	3.9	7.7
50	53.5	0.098	-20.1750.48	6.1	4.9	3.6	8.1
50	54	0.091	-20.8190.41	5.6	4.5	3.2	8.5
50	54.5	0.083	-21.6180.34	5.1	4.1	2.9	8.9
50	55	0.075	-22.4990.28	4.6	3.7	2.6	9.3
50	55.5	0.067	-23.4790.22	4.1	3.3	2.3	9.6
50	56	0.06	-24.4370.18	3.7	3	2	10
50	56.5	0.052	-25.6800.14	3.2	2.6	1.7	10.4
50	57	0.044	-27.1310.10	2.7	2.2	1.4	10.8
50	57.5	0.036	-28.8740.06	2.2	1.8	1.1	11.2
50	58	0.028	-31.0570.04	1.7	1.4	0.9	11.5
50	58.5	0.021	-33.5560.02	1.3	1.1	0.6	12
50	59	0.013	-37.7210.01	0.8	0.6	0.4	12.4
50	59.5	0.006	-44.4370.00	0.3	0.2	0.1	12.6
50	60	0.001	-60.0000.00	0	0	0	12.3
50	60.5	0.008	-41.9380.00	0.4	0.3	0.1	11.9
50	61	0.015	-36.4780.01	0.9	0.7	0.4	11.5
50	61.5	0.021	-33.5560.02	1.3	1.1	0.6	11.2
50	62	0.027	-31.3730.04	1.6	1.4	0.7	10.9
50	62.5	0.033	-29.6300.05	2	1.7	0.9	10.5
50	63	0.039	-28.1790.08	2.4	2.1	1	10.1
50	63.5	0.045	-26.9360.10	2.8	2.5	1.2	9.9
50	64	0.05	-26.0210.13	3.1	2.7	1.3	9.6

50	64.5	0.055	-25.1930.15	3.4	3	1.4	9.4
50	65	0.059	-24.5830.17	3.6	3.2	1.5	9.1
50	65.5	0.064	-23.8760.20	3.9	3.5	1.6	8.8
50	66	0.068	-23.3500.23	4.2	3.8	1.7	8.6
50	66.5	0.071	-22.9750.25	4.4	4	1.7	8.4
50	67	0.075	-22.4990.28	4.6	4.2	1.7	8.2
50	67.5	0.078	-22.1580.30	4.8	4.4	1.8	8
50	68	0.081	-21.8300.33	5	4.6	1.8	7.9
50	68.5	0.083	-21.6180.34	5.1	4.7	1.8	7.7
50	69	0.086	-21.3100.37	5.3	4.9	1.9	7.6
50	69.5	0.088	-21.1100.39	5.4	5	1.8	7.5
50	70	0.089	-21.0120.40	5.5	5.1	1.8	7.4
50	70.5	0.091	-20.8190.41	5.6	5.2	1.8	7.2
50	71	0.093	-20.6300.43	5.8	5.4	1.8	7.2
50	71.5	0.094	-20.5370.44	5.8	5.4	1.8	7
50	72	0.095	-20.4460.45	5.9	5.6	1.8	7
50	72.5	0.095	-20.4460.45	5.9	5.6	1.7	7
50	73	0.096	-20.3550.46	5.9	5.6	1.7	7
50	73.5	0.096	-20.3550.46	5.9	5.6	1.6	7
50	74	0.096	-20.3550.46	5.9	5.6	1.6	7
50	74.5	0.096	-20.3550.46	5.9	5.6	1.5	7
50	75	0.096	-20.3550.46	5.9	5.6	1.5	6.9
50	75.5	0.096	-20.3550.46	5.9	5.7	1.4	6.9
50	76	0.095	-20.4460.45	5.9	5.7	1.4	6.9
50	76.5	0.095	-20.4460.45	5.9	5.7	1.3	7
50	77	0.094	-20.5370.44	5.8	5.6	1.3	7
50	77.5	0.093	-20.6300.43	5.8	5.6	1.2	7.1
50	78	0.092	-20.7240.42	5.7	5.5	1.1	7.2
50	78.5	0.09	-20.9150.41	5.6	5.4	1.1	7.3
50	79	0.089	-21.0120.40	5.5	5.3	1	7.3
50	79.5	0.088	-21.1100.39	5.4	5.3	0.9	7.4
50	80	0.086	-21.3100.37	5.3	5.2	0.9	7.4
50	80.5	0.085	-21.4120.36	5.3	5.2	0.8	7.4
50	81	0.085	-21.4120.36	5.3	5.2	0.8	7.5
50	81.5	0.084	-21.5140.35	5.2	5.1	0.7	7.6
50	82	0.083	-21.6180.34	5.1	5	0.7	7.6
50	82.5	0.082	-21.7240.34	5.1	5	0.6	7.7
50	83	0.081	-21.8300.33	5	4.9	0.6	7.8
50	83.5	0.08	-21.9380.32	4.9	4.8	0.5	7.9
50	84	0.078	-22.1580.30	4.8	4.7	0.5	7.9
50	84.5	0.077	-22.2700.30	4.8	4.7	0.4	8
50	85	0.076	-22.3840.29	4.7	4.6	0.4	8
50	85.5	0.076	-22.3840.29	4.7	4.6	0.3	8
50	86	0.076	-22.3840.29	4.7	4.6	0.3	8.1
50	86.5	0.075	-22.4990.28	4.6	4.5	0.2	8.1
50	87	0.075	-22.4990.28	4.6	4.5	0.2	8.1
50	87.5	0.075	-22.4990.28	4.6	4.5	0.2	8.1
50	88	0.075	-22.4990.28	4.6	4.5	0.1	12.2
50	88.5	0.009	-40.9150.00	0.5	0.4	0	12.2
50	89	0.009	-40.9150.00	0.5	0.4	0	12.2
50	89.5	0.009	-40.9150.00	0.5	0.4	0	10.4
50	65.5	0.041	-27.7440.08	2.5	2.2	1	11.7