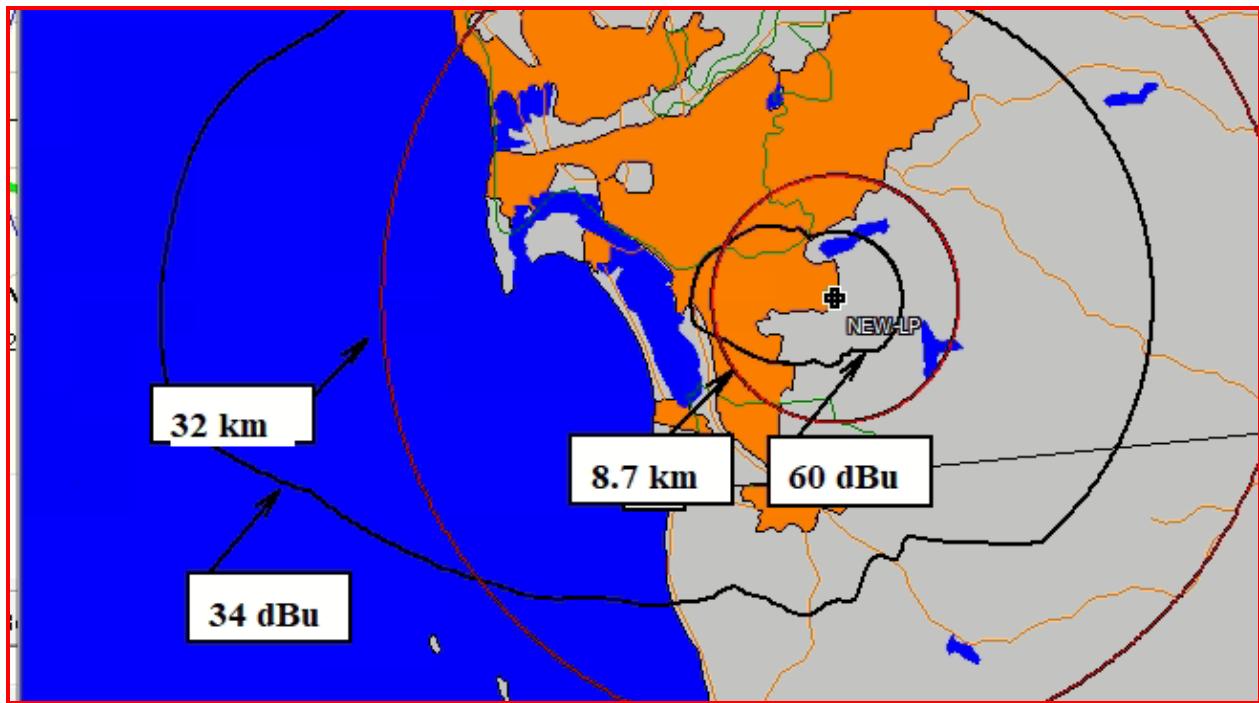


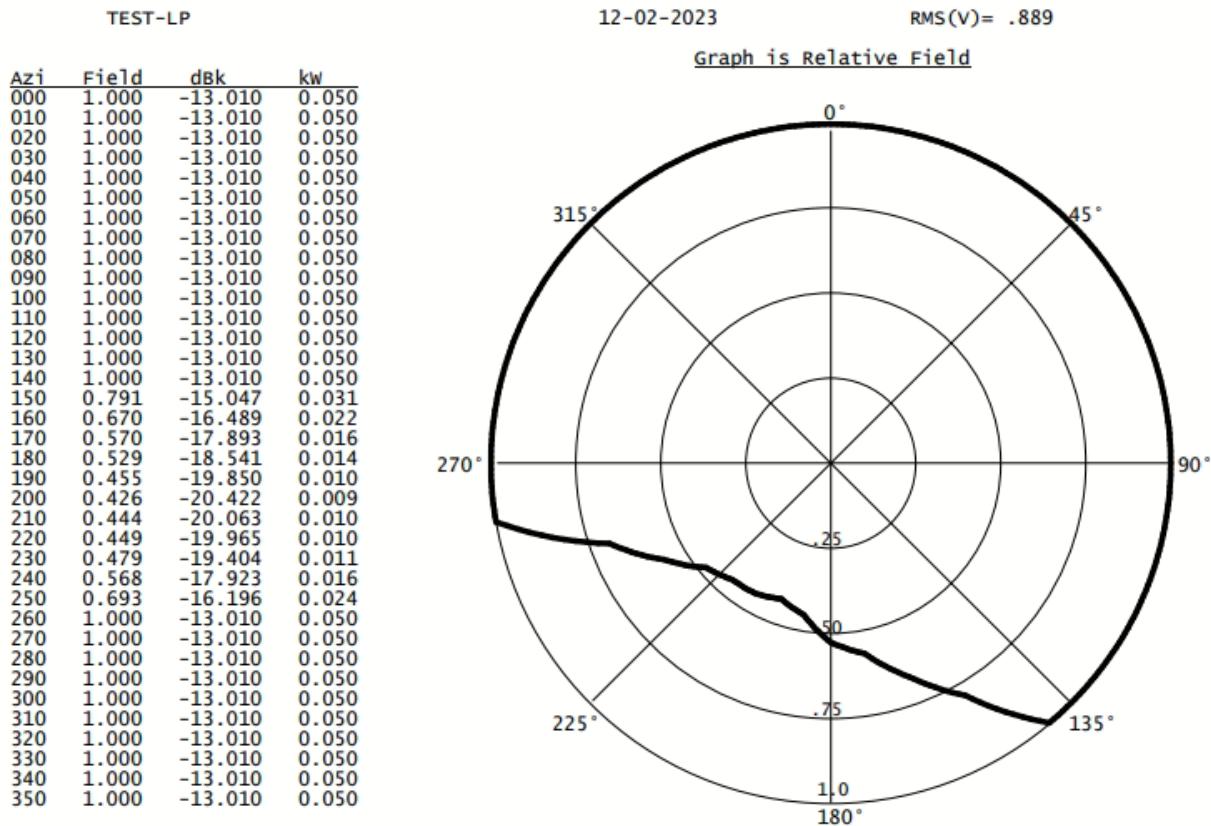
Technical Attachment

Mexican Border Compliance

Facility 50 w ERP with Directional Antenna



Directional Antenna

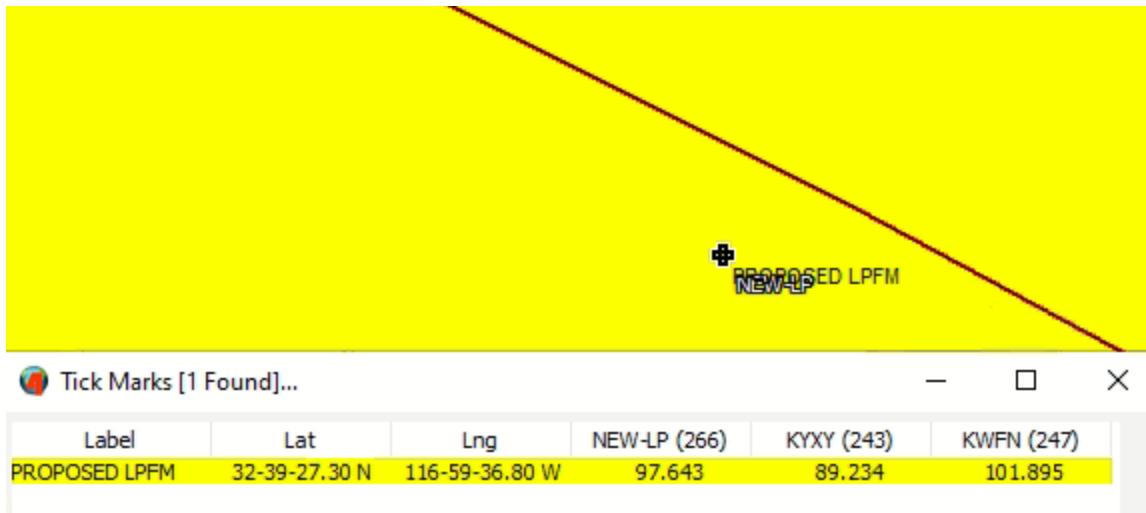


Second Adjacent Channel Waiver Request

Applicant requests a waiver to second adjacent restrictions of 73.807 of the minimum spacing rules.

At the proposed location the following second adjacent channels have the following signal strengths:¹

¹ Longley-Rice (ITS-ITM) propagation utilized via professional broadcast software V-Soft Communications Probe 4 using FCC preferences (Climate: Continental temperate, Conductivity 0.005, Dielec Const 15, Refractivity 311, Receiver HtAG 9.1m, Receiver Gain 0 db, Time Variability 50%, Sit. Variability 50%, ITM Mode: Broadcast, and terrain clutter setting)



KWFN & KWFN (CP) 101.9 dBu
 KYXY 89.2 dBu

We choose the smaller signal strength of 89.2 dBu of KYXY (which will imply protection to also KWFN). Using U/D methodology, interference will occur when KWFN's signal strength's interfering signal exceeds the desired signal by 40 dBu. So the area of predicted interference would then be bounded by the 129.2 dBu contour.

The field strength of the proposed antenna array falls quickly at depression angles below the horizon. Using the elevation pattern sheet provided by Kathrein for a two-bay folded dipole the distance to the 129.2 contour at various depression angles is demonstrated below. The data demonstrates that the lowest point at which the signal strength raises to 129.2 is 3.3 below the center of radiation of the two bay antenna, or 6.7 meters above the ground. Therefore, there is ample clearance to nearby structures. Thus no interference is imparted to the nearby population. Due to zero population within the sphere of interference, this meets the criteria within the Living Way precedent to qualify for a waiver of FCC 47 Sec 73.807.

Power (ERP)	Angle of Depression	RELATIVE FIELD	dB FROM RELATIVE	ERP	ANGULAR DISTANCE TO 129.2 dBu CONTOUR	VERTICAL DISTANCE (below the antenna)	HORIZONTAL DISTANCE TO THE 129.2 dBu CONTOUR	CLEARANCE OF CONTOUR ABOVE GROUND
50	-90	0.023	-32.765	0.03	0.3	0.2	0	9.8
50	-89	0.015	-36.478	0.01	0.2	0.1	0	9.9
50	-88	0.01	-40.000	0.01	0.1	0	0	10
50	-87	0.01	-40.000	0.01	0.1	0	0	10
50	-86	0.01	-40.000	0.01	0.1	0	0	10
50	-85	0.018	-34.895	0.02	0.3	0.2	0	9.8
50	-84	0.026	-31.701	0.03	0.4	0.3	0	9.7
50	-83	0.035	-29.119	0.06	0.6	0.5	0	9.5
50	-82	0.043	-27.331	0.09	0.7	0.6	0	9.4
50	-81	0.052	-25.680	0.14	0.8	0.7	0.1	9.3
50	-80	0.06	-24.437	0.18	1	0.9	0.1	9.1
50	-79	0.069	-23.223	0.24	1.1	1	0.2	9
50	-78	0.078	-22.158	0.30	1.3	1.2	0.2	8.8
50	-77	0.087	-21.210	0.38	1.4	1.3	0.3	8.7
50	-76	0.095	-20.446	0.45	1.6	1.5	0.3	8.5
50	-75	0.104	-19.659	0.54	1.7	1.6	0.4	8.4
50	-74	0.113	-18.938	0.64	1.9	1.8	0.5	8.2
50	-73	0.122	-18.273	0.74	2	1.9	0.5	8.1
50	-72	0.131	-17.655	0.86	2.2	2	0.6	8
50	-71	0.139	-17.140	0.97	2.3	2.1	0.7	7.9
50	-70	0.148	-16.595	1.10	2.5	2.3	0.8	7.7
50	-69	0.157	-16.082	1.23	2.6	2.4	0.9	7.6
50	-68	0.165	-15.650	1.36	2.8	2.5	1	7.5
50	-67	0.173	-15.239	1.50	2.9	2.6	1.1	7.4
50	-66	0.181	-14.846	1.64	3.1	2.8	1.2	7.2
50	-65	0.189	-14.471	1.79	3.2	2.8	1.3	7.2
50	-64	0.196	-14.155	1.92	3.3	2.9	1.4	7.1
50	-63	0.204	-13.807	2.08	3.5	3.1	1.5	6.9
50	-62	0.21	-13.556	2.21	3.6	3.1	1.6	6.9
50	-61	0.216	-13.311	2.33	3.7	3.2	1.7	6.8
50	-60	0.222	-13.073	2.46	3.8	3.2	1.9	6.8
50	-59	0.227	-12.879	2.58	3.9	3.3	2	6.7
50	-58	0.232	-12.690	2.69	3.9	3.3	2	6.7

50	-57	0.235	-12.579	2.76	4	3.3	2.1	6.7
50	-56	0.238	-12.468	2.83	4	3.3	2.2	6.7
50	-55	0.24	-12.396	2.88	4.1	3.3	2.3	6.7
50	-54	0.241	-12.360	2.90	4.1	3.3	2.4	6.7
50	-53	0.242	-12.324	2.93	4.1	3.2	2.4	6.8
50	-52	0.241	-12.360	2.90	4.1	3.2	2.5	6.8
50	-51	0.239	-12.432	2.86	4.1	3.1	2.5	6.9
50	-50	0.235	-12.579	2.76	4	3	2.5	7
50	-49	0.231	-12.728	2.67	3.9	2.9	2.5	7.1
50	-48	0.225	-12.956	2.53	3.8	2.8	2.5	7.2
50	-47	0.217	-13.271	2.35	3.7	2.7	2.5	7.3
50	-46	0.208	-13.639	2.16	3.5	2.5	2.4	7.5
50	-45	0.198	-14.067	1.96	3.4	2.4	2.4	7.6
50	-44	0.185	-14.657	1.71	3.1	2.1	2.2	7.9
50	-43	0.171	-15.340	1.46	2.9	1.9	2.1	8.1
50	-42	0.156	-16.138	1.22	2.6	1.7	1.9	8.3
50	-41	0.138	-17.202	0.95	2.3	1.5	1.7	8.5
50	-40	0.119	-18.489	0.71	2	1.2	1.5	8.8
50	-39	0.098	-20.175	0.48	1.6	1	1.2	9
50	-38	0.076	-22.384	0.29	1.3	0.8	1	9.2
50	-37	0.051	-25.849	0.13	0.8	0.4	0.6	9.6
50	-36	0.025	-32.041	0.03	0.4	0.2	0.3	9.8
50	-35	0.01	-40.000	0.01	0.1	0	0	10
50	-34	0.032	-29.897	0.05	0.5	0.2	0.4	9.8
50	-33	0.062	-24.152	0.19	1	0.5	0.8	9.5
50	-32	0.094	-20.537	0.44	1.6	0.8	1.3	9.2
50	-31	0.128	-17.856	0.82	2.1	1	1.8	9
50	-30	0.163	-15.756	1.33	2.8	1.3	2.4	8.7
50	-29	0.199	-14.023	1.98	3.4	1.6	2.9	8.4
50	-28	0.235	-12.579	2.76	4	1.8	3.5	8.2
50	-27	0.273	-11.277	3.73	4.6	2	4	8
50	-26	0.311	-10.145	4.84	5.3	2.3	4.7	7.7
50	-25	0.35	-9.119	6.13	6	2.5	5.4	7.5
50	-24	0.389	-8.201	7.57	6.6	2.6	6	7.4
50	-23	0.428	-7.371	9.16	7.3	2.8	6.7	7.2

50	-22	0.468	-6.595	10.95	8	2.9	7.4	7.1
50	-21	0.507	-5.900	12.85	8.7	3.1	8.1	6.9
50	-20	0.545	-5.272	14.85	9.3	3.1	8.7	6.9
50	-19	0.584	-4.672	17.05	10	3.2	9.4	6.8
50	-18	0.621	-4.138	19.28	10.6	3.2	10	6.8
50	-17	0.657	-3.649	21.58	11.2	3.2	10.7	6.8
50	-16	0.693	-3.185	24.01	11.9	3.2	11.4	6.8
50	-15	0.726	-2.781	26.35	12.4	3.2	11.9	6.8
50	-14	0.759	-2.395	28.80	13	3.1	12.6	6.9
50	-13	0.79	-2.047	31.21	13.5	3	13.1	7
50	-12	0.82	-1.724	33.62	14	2.9	13.6	7.1
50	-11	0.847	-1.442	35.87	14.5	2.7	14.2	7.3
50	-10	0.873	-1.180	38.11	15	2.6	14.7	7.4
50	-9	0.896	-0.954	40.14	15.3	2.3	15.1	7.7
50	-8	0.918	-0.743	42.14	15.7	2.1	15.5	7.9
50	-7	0.936	-0.574	43.80	16	1.9	15.8	8.1
50	-6	0.953	-0.418	45.41	16.3	1.7	16.2	8.3
50	-5	0.967	-0.291	46.75	16.6	1.4	16.5	8.6
50	-4	0.978	-0.193	47.82	16.8	1.1	16.7	8.9
50	-3	0.988	-0.105	48.81	16.9	0.8	16.8	9.2
50	-2	0.994	-0.052	49.40	17	0.5	16.9	9.5
50	-1	0.998	-0.017	49.80	17.1	0.2	17	9.8
50	0	1	0.000	50.00	17.1	0	17.1	10
50	1	0.998	-0.017	49.80	17.1	0.2	17	9.8
50	2	0.994	-0.052	49.40	17	0.5	16.9	9.5
50	3	0.988	-0.105	48.81	16.9	0.8	16.8	9.2
50	4	0.978	-0.193	47.82	16.8	1.1	16.7	8.9
50	5	0.967	-0.291	46.75	16.6	1.4	16.5	8.6
50	6	0.953	-0.418	45.41	16.3	1.7	16.2	8.3
50	7	0.936	-0.574	43.80	16	1.9	15.8	8.1
50	8	0.918	-0.743	42.14	15.7	2.1	15.5	7.9
50	9	0.896	-0.954	40.14	15.3	2.3	15.1	7.7
50	10	0.873	-1.180	38.11	15	2.6	14.7	7.4
50	11	0.847	-1.442	35.87	14.5	2.7	14.2	7.3
50	12	0.82	-1.724	33.62	14	2.9	13.6	7.1

50	13	0.79	-2.047	31.21	13.5	3	13.1	7
50	14	0.759	-2.395	28.80	13	3.1	12.6	6.9
50	15	0.726	-2.781	26.35	12.4	3.2	11.9	6.8
50	16	0.693	-3.185	24.01	11.9	3.2	11.4	6.8
50	17	0.657	-3.649	21.58	11.2	3.2	10.7	6.8
50	18	0.621	-4.138	19.28	10.6	3.2	10	6.8
50	19	0.584	-4.672	17.05	10	3.2	9.4	6.8
50	20	0.545	-5.272	14.85	9.3	3.1	8.7	6.9
50	21	0.507	-5.900	12.85	8.7	3.1	8.1	6.9
50	22	0.468	-6.595	10.95	8	2.9	7.4	7.1
50	23	0.428	-7.371	9.16	7.3	2.8	6.7	7.2
50	24	0.389	-8.201	7.57	6.6	2.6	6	7.4
50	25	0.35	-9.119	6.13	6	2.5	5.4	7.5
50	26	0.311	-10.145	4.84	5.3	2.3	4.7	7.7
50	27	0.273	-11.277	3.73	4.6	2	4	8
50	28	0.235	-12.579	2.76	4	1.8	3.5	8.2
50	29	0.199	-14.023	1.98	3.4	1.6	2.9	8.4
50	30	0.163	-15.756	1.33	2.8	1.3	2.4	8.7
50	31	0.128	-17.856	0.82	2.1	1	1.8	9
50	32	0.095	-20.446	0.45	1.6	0.8	1.3	9.2
50	33	0.062	-24.152	0.19	1	0.5	0.8	9.5
50	34	0.032	-29.897	0.05	0.5	0.2	0.4	9.8
50	35	0.01	-40.000	0.01	0.1	0	0	10
50	36	0.025	-32.041	0.03	0.4	0.2	0.3	9.8
50	37	0.051	-25.849	0.13	0.8	0.4	0.6	9.6
50	38	0.076	-22.384	0.29	1.3	0.8	1	9.2
50	39	0.098	-20.175	0.48	1.6	1	1.2	9
50	40	0.119	-18.489	0.71	2	1.2	1.5	8.8
50	41	0.138	-17.202	0.95	2.3	1.5	1.7	8.5
50	42	0.156	-16.138	1.22	2.6	1.7	1.9	8.3
50	43	0.171	-15.340	1.46	2.9	1.9	2.1	8.1
50	44	0.185	-14.657	1.71	3.1	2.1	2.2	7.9
50	45	0.198	-14.067	1.96	3.4	2.4	2.4	7.6
50	46	0.208	-13.639	2.16	3.5	2.5	2.4	7.5
50	47	0.217	-13.271	2.35	3.7	2.7	2.5	7.3

50	48	0.225	-12.956	2.53	3.8	2.8	2.5	7.2
50	49	0.231	-12.728	2.67	3.9	2.9	2.5	7.1
50	50	0.235	-12.579	2.76	4	3	2.5	7
50	51	0.239	-12.432	2.86	4.1	3.1	2.5	6.9
50	52	0.241	-12.360	2.90	4.1	3.2	2.5	6.8
50	53	0.242	-12.324	2.93	4.1	3.2	2.4	6.8
50	54	0.241	-12.360	2.90	4.1	3.3	2.4	6.7
50	55	0.24	-12.396	2.88	4.1	3.3	2.3	6.7
50	56	0.238	-12.468	2.83	4	3.3	2.2	6.7
50	57	0.235	-12.579	2.76	4	3.3	2.1	6.7
50	58	0.232	-12.690	2.69	3.9	3.3	2	6.7
50	59	0.227	-12.879	2.58	3.9	3.3	2	6.7
50	60	0.222	-13.073	2.46	3.8	3.2	1.9	6.8
50	61	0.216	-13.311	2.33	3.7	3.2	1.7	6.8
50	62	0.21	-13.556	2.21	3.6	3.1	1.6	6.9
50	63	0.204	-13.807	2.08	3.5	3.1	1.5	6.9
50	64	0.196	-14.155	1.92	3.3	2.9	1.4	7.1
50	65	0.189	-14.471	1.79	3.2	2.8	1.3	7.2
50	66	0.181	-14.846	1.64	3.1	2.8	1.2	7.2
50	67	0.173	-15.239	1.50	2.9	2.6	1.1	7.4
50	68	0.165	-15.650	1.36	2.8	2.5	1	7.5
50	69	0.157	-16.082	1.23	2.6	2.4	0.9	7.6
50	70	0.148	-16.595	1.10	2.5	2.3	0.8	7.7
50	71	0.139	-17.140	0.97	2.3	2.1	0.7	7.9
50	72	0.131	-17.655	0.86	2.2	2	0.6	8
50	73	0.122	-18.273	0.74	2	1.9	0.5	8.1
50	74	0.113	-18.938	0.64	1.9	1.8	0.5	8.2
50	75	0.104	-19.659	0.54	1.7	1.6	0.4	8.4
50	76	0.095	-20.446	0.45	1.6	1.5	0.3	8.5
50	77	0.087	-21.210	0.38	1.4	1.3	0.3	8.7
50	78	0.078	-22.158	0.30	1.3	1.2	0.2	8.8
50	79	0.069	-23.223	0.24	1.1	1	0.2	9
50	80	0.06	-24.437	0.18	1	0.9	0.1	9.1
50	81	0.052	-25.680	0.14	0.8	0.7	0.1	9.3
50	82	0.043	-27.331	0.09	0.7	0.6	0	9.4

50	83	0.035	-29.119	0.06	0.6	0.5	0	9.5
50	84	0.026	-31.701	0.03	0.4	0.3	0	9.7
50	85	0.018	-34.895	0.02	0.3	0.2	0	9.8
50	86	0.01	-40.000	0.01	0.1	0	0	10
50	87	0.01	-40.000	0.01	0.1	0	0	10
50	88	0.01	-40.000	0.01	0.1	0	0	10
50	89	0.015	-36.478	0.01	0.2	0.1	0	9.9
50	90	0.023	-32.765	0.03	0.3	0.2	0	9.8