

PROPOSED LPFM FACILITY, SAN FRANCISCO, CA

PROPOSAL

This application proposes the use of Channel 229 for Low Power FM, with the proposed parameters:

COOR	37 48 17.9 N 122 28 17.2 W
ASR	NA
AGL	12 m
TOWER	18.6
AMSL	76 m
HAAT	87 m
WATTS	50
CHANNEL	229

SECOND ADJACENT PROTECTION/WAIVER REQUEST

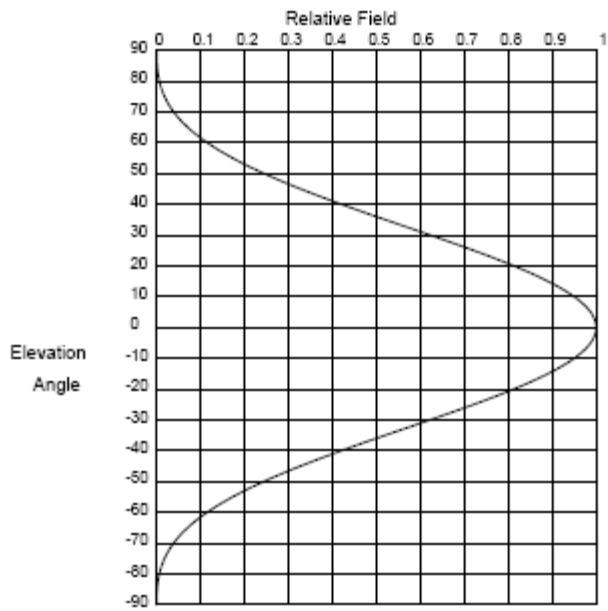
Station is short spaced regarding second adjacents concerning KPFA and KRZZ. At the proposed site, with field strengths are 88.3 dBu and 84.6 dBu respectively. In this study we will take the 88.3 dBu field strength from KPFA and conservatively demonstrate the proposed clears interference to zero population, thus additionally clearing zero interference to KRZZ (eg We will use the 88.3 dBu value as to show the maximum interference area at the site as the smaller interference area). Contour protection to second adjacent station KPFA is provided using the ratio method.

Using the appropriate U/D ratio of 40 db, the corresponding interfering contour of the proposed facility is thus 128.3 dBu. At 50 watts, this contour would extend to a distance of 19 meters from the antenna. However, the field strength of the proposed translator's antenna system falls quickly at depression angles below the horizon. Using elevation pattern data provided by SWR (see below) the distance to the 128.3 dBu contour at various depression angles is tabulated below. The data shows that the lowest point at which the signal strength rises to 128.3 dBu is

5.8 meters below the center of radiation of the antenna system, or 9.5 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 128.3 dBu F(50,10) interfering contour is 9.5 meters above the ground.

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

	DEPRESSION ANGLE BELOW HORIZON	RELATIVE FIELD	dB FROM RELATIVE		ANGULAR DISTANCE TO 128.3 dBu CONTOUR	VERTICAL DISTANCE (below antenna)	HORIZONTAL DISTANCE TO 128.3 dBu CONTOUR	CLEARANCE OF CONTOUR ABOVE GROUND
MAX ERP				ERP				
50	0	1	0.000	50.00	19	0	19	15
50	5	0.987	-0.114	48.71	18.8	1.6	18.7	13.4
50	10	0.95	-0.446	45.13	18.1	3.1	17.8	11.9
50	15	0.89	-1.012	39.61	16.9	4.3	16.3	10.7
50	20	0.812	-1.809	32.97	15.4	5.2	14.4	9.8
50	25	0.721	-2.841	25.99	13.7	5.7	12.4	9.3
50	30	0.622	-4.124	19.34	11.8	5.8	10.2	9.2
50	35	0.52	-5.680	13.52	9.9	5.6	8.1	9.4
50	40	0.42	-7.535	8.82	8	5.1	6.1	9.9
50	45	0.327	-9.709	5.35	6.2	4.3	4.3	10.7
50	50	0.244	-12.252	2.98	4.6	3.5	2.9	11.5
50	55	0.173	-15.239	1.50	3.2	2.6	1.8	12.4
50	60	0.115	-18.786	0.66	2.1	1.8	1	13.2
50	65	0.07	-23.098	0.25	1.3	1.1	0.5	13.9
50	70	0.039	-28.179	0.08	0.7	0.6	0.2	14.4
50	75	0.018	-34.895	0.02	0.3	0.2	0	14.8
50	80	0.006	-44.437	0.00	0.1	0	0	15
50	85	0.001	-60.000	0.00	0	0	0	15
50	90	0	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!



Elevation Pattern

Scale: Linear

Units: Field, Relative

Systems With Reliability LLC

CLIENT: Various.

Date: 8/16/2013

ANTENNA TYPE: FMECR/2-HWS

FREQUENCY: 97.9

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.): 0

DIRECTIVITY(Horiz): 1.39/1.43 dBd

Null Fill(s)(%): 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.00 (-50)	52.0	.214 (-13.4)	14.0	.904 (-0.878)
89.0	.00 (-91.156)	51.0	.229 (-12.821)	13.0	.917 (-0.757)
88.0	.00 (-78.01)	50.0	.244 (-12.26)	12.0	.929 (-0.644)
87.0	.00 (-69.988)	49.0	.259 (-11.717)	11.0	.94 (-0.541)
86.0	.001 (-64.112)	48.0	.276 (-11.191)	10.0	.95 (-0.447)
85.0	.001 (-59.44)	47.0	.292 (-10.682)	9.8	.952 (-0.429)
84.0	.002 (-55.546)	46.0	.309 (-10.188)	9.6	.954 (-0.412)
83.0	.002 (-52.199)	45.0	.327 (-9.711)	9.4	.956 (-0.395)
82.0	.003 (-49.26)	44.0	.345 (-9.246)	9.2	.957 (-0.378)
81.0	.005 (-46.539)	43.0	.363 (-8.797)	9.0	.959 (-0.362)
80.0	.006 (-44.272)	42.0	.382 (-8.362)	8.8	.961 (-0.346)
79.0	.008 (-42.113)	41.0	.401 (-7.941)	8.6	.963 (-0.33)
78.0	.01 (-40.128)	40.0	.42 (-7.533)	8.4	.964 (-0.315)
77.0	.012 (-38.262)	39.0	.44 (-7.138)	8.2	.966 (-0.3)
76.0	.015 (-36.553)	38.0	.459 (-6.755)	8.0	.968 (-0.286)
75.0	.018 (-34.986)	37.0	.479 (-6.387)	7.8	.969 (-0.272)
74.0	.021 (-33.487)	36.0	.50 (-6.029)	7.6	.971 (-0.258)
73.0	.025 (-32.074)	35.0	.52 (-5.683)	7.4	.972 (-0.244)
72.0	.029 (-30.74)	34.0	.54 (-5.349)	7.2	.974 (-0.231)
71.0	.034 (-29.475)	33.0	.561 (-5.027)	7.0	.975 (-0.219)
70.0	.039 (-28.274)	32.0	.581 (-4.716)	6.8	.977 (-0.206)
69.0	.044 (-27.13)	31.0	.601 (-4.416)	6.6	.978 (-0.194)
68.0	.05 (-26.039)	30.0	.622 (-4.126)	6.4	.979 (-0.183)
67.0	.056 (-24.997)	29.0	.642 (-3.848)	6.2	.98 (-0.171)
66.0	.063 (-24)	28.0	.662 (-3.58)	6.0	.982 (-0.161)
65.0	.07 (-23.044)	27.0	.682 (-3.323)	5.8	.983 (-0.15)
64.0	.078 (-22.126)	26.0	.702 (-3.076)	5.6	.984 (-0.14)
63.0	.087 (-21.245)	25.0	.721 (-2.839)	5.4	.985 (-0.13)
62.0	.096 (-20.397)	24.0	.74 (-2.612)	5.2	.986 (-0.121)
61.0	.105 (-19.581)	23.0	.759 (-2.395)	5.0	.987 (-0.111)
60.0	.115 (-18.794)	22.0	.777 (-2.188)	4.8	.988 (-0.103)
59.0	.125 (-18.036)	21.0	.795 (-1.991)	4.6	.989 (-0.094)
58.0	.136 (-17.304)	20.0	.812 (-1.804)	4.4	.99 (-0.086)
57.0	.148 (-16.597)	19.0	.829 (-1.626)	4.2	.991 (-0.079)
56.0	.16 (-15.914)	18.0	.846 (-1.457)	4.0	.992 (-0.071)
55.0	.173 (-15.254)	17.0	.861 (-1.299)	3.8	.993 (-0.064)
54.0	.186 (-14.615)	16.0	.876 (-1.149)	3.6	.993 (-0.058)
53.0	.20 (-13.996)	15.0	.89 (-1.009)	3.4	.994 (-0.052)

Systems With Reliability LLC

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CLIENT: Various /	Date: 8/16/2013
ANTENNA TYPE: FMECR/2-HWS	
FREQUENCY: 97.9	
PATTERN POL.: Circular	
DIRECTIVITY(Peak): 1.39/1.43 dBd	Beam Tilt (Deg.): 0
DIRECTIVITY(Horiz): 1.39/1.43 dBd	Null Fill(s)(%): 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.995 (-0.046)	-4.4	.99 (-0.095)	-12.0	.929 (-0.644)
3.0	.995 (-0.04)	-4.6	.989 (-0.094)	-12.2	.926 (-0.666)
2.8	.995 (-0.035)	-4.8	.988 (-0.103)	-12.4	.924 (-0.688)
2.6	.997 (-0.03)	-5.0	.987 (-0.111)	-12.6	.921 (-0.711)
2.4	.997 (-0.026)	-5.2	.986 (-0.121)	-12.8	.919 (-0.733)
2.2	.998 (-0.022)	-5.4	.985 (-0.13)	-13.0	.917 (-0.757)
2.0	.998 (-0.018)	-5.6	.984 (-0.14)	-13.2	.914 (-0.78)
1.8	.998 (-0.014)	-5.8	.983 (-0.15)	-13.4	.912 (-0.804)
1.6	.999 (-0.011)	-6.0	.982 (-0.161)	-13.6	.909 (-0.828)
1.4	.999 (-0.009)	-6.2	.98 (-0.171)	-13.8	.906 (-0.853)
1.2	.999 (-0.006)	-6.4	.979 (-0.183)	-14.0	.904 (-0.878)
1.0	.999 (-0.004)	-6.6	.978 (-0.194)	-14.2	.901 (-0.904)
.8	1.00 (-0.003)	-6.8	.977 (-0.206)	-14.4	.899 (-0.929)
.6	1.00 (-0.002)	-7.0	.975 (-0.219)	-14.6	.896 (-0.956)
.4	1.00 (-0.001)	-7.2	.974 (-0.231)	-14.8	.893 (-0.982)
.2	1.00 (0)	-7.4	.972 (-0.244)	-15.0	.89 (-1.009)
.0	1.00 (0)	-7.6	.971 (-0.258)	-15.2	.888 (-1.036)
-.2	1.00 (0)	-7.8	.969 (-0.272)	-15.4	.885 (-1.064)
-.4	1.00 (-0.001)	-8.0	.968 (-0.286)	-15.6	.882 (-1.092)
-.6	1.00 (-0.002)	-8.2	.966 (-0.3)	-15.8	.879 (-1.12)
-.8	1.00 (-0.003)	-8.4	.964 (-0.315)	-16.0	.876 (-1.149)
-1.0	.999 (-0.004)	-8.6	.963 (-0.33)	-16.2	.873 (-1.178)
-1.2	.999 (-0.006)	-8.8	.961 (-0.346)	-16.4	.87 (-1.208)
-1.4	.999 (-0.009)	-9.0	.959 (-0.362)	-16.6	.867 (-1.238)
-1.6	.999 (-0.011)	-9.2	.957 (-0.378)	-16.8	.864 (-1.268)
-1.8	.998 (-0.014)	-9.4	.955 (-0.395)	-17.0	.861 (-1.299)
-2.0	.998 (-0.018)	-9.6	.954 (-0.412)	-17.2	.858 (-1.33)
-2.2	.998 (-0.022)	-9.8	.952 (-0.429)	-17.4	.855 (-1.361)
-2.4	.997 (-0.026)	-10.0	.95 (-0.447)	-17.6	.852 (-1.393)
-2.6	.997 (-0.03)	-10.2	.948 (-0.465)	-17.8	.849 (-1.425)
-2.8	.996 (-0.035)	-10.4	.946 (-0.483)	-18.0	.846 (-1.457)
-3.0	.995 (-0.04)	-10.6	.944 (-0.502)	-18.2	.842 (-1.49)
-3.2	.995 (-0.046)	-10.8	.942 (-0.521)	-18.4	.839 (-1.524)
-3.4	.994 (-0.052)	-11.0	.94 (-0.541)	-18.6	.836 (-1.557)
-3.6	.993 (-0.058)	-11.2	.937 (-0.561)	-18.8	.833 (-1.591)
-3.8	.993 (-0.064)	-11.4	.935 (-0.581)	-19.0	.829 (-1.626)
-4.0	.992 (-0.071)	-11.6	.933 (-0.602)	-19.2	.826 (-1.661)
-4.2	.991 (-0.079)	-11.8	.931 (-0.623)	-19.4	.823 (-1.696)

Systems With Reliability LLC

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CLIENT: Various /

Date: 8/16/2013

ANTENNA TYPE: FMECR/2-HWS

FREQUENCY: 97.9

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.): 0

DIRECTIVITY(Horiz): 1.39/1.43 dBd

Null Fill(s)(%): 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.819 (-1.731)	-27.2	.678 (-3.373)	-54.0	.186 (-14.515)
-19.8	.816 (-1.767)	-27.4	.674 (-3.424)	-55.0	.173 (-15.254)
-20.0	.812 (-1.804)	-27.6	.67 (-3.476)	-56.0	.16 (-15.914)
-20.2	.809 (-1.841)	-27.8	.666 (-3.528)	-57.0	.148 (-16.597)
-20.4	.806 (-1.877)	-28.0	.662 (-3.58)	-58.0	.136 (-17.304)
-20.6	.802 (-1.915)	-28.2	.658 (-3.633)	-59.0	.125 (-18.036)
-20.8	.799 (-1.953)	-28.4	.654 (-3.686)	-60.0	.115 (-18.794)
-21.0	.795 (-1.991)	-28.6	.65 (-3.739)	-61.0	.105 (-19.581)
-21.2	.792 (-2.03)	-28.8	.646 (-3.793)	-62.0	.096 (-20.397)
-21.4	.788 (-2.069)	-29.0	.642 (-3.848)	-63.0	.087 (-21.245)
-21.6	.784 (-2.108)	-29.2	.638 (-3.903)	-64.0	.078 (-22.126)
-21.8	.781 (-2.148)	-29.4	.634 (-3.958)	-65.0	.07 (-23.044)
-22.0	.777 (-2.188)	-29.6	.63 (-4.014)	-66.0	.063 (-24)
-22.2	.774 (-2.229)	-29.8	.626 (-4.07)	-67.0	.056 (-24.997)
-22.4	.77 (-2.27)	-30.0	.622 (-4.126)	-68.0	.05 (-26.039)
-22.6	.766 (-2.311)	-31.0	.601 (-4.416)	-69.0	.044 (-27.13)
-22.8	.763 (-2.353)	-32.0	.581 (-4.716)	-70.0	.039 (-28.274)
-23.0	.759 (-2.395)	-33.0	.561 (-5.027)	-71.0	.034 (-29.475)
-23.2	.755 (-2.438)	-34.0	.54 (-5.349)	-72.0	.029 (-30.74)
-23.4	.752 (-2.481)	-35.0	.52 (-5.683)	-73.0	.025 (-32.074)
-23.6	.748 (-2.524)	-36.0	.50 (-6.029)	-74.0	.021 (-33.487)
-23.8	.744 (-2.568)	-37.0	.479 (-6.387)	-75.0	.018 (-34.966)
-24.0	.74 (-2.612)	-38.0	.459 (-6.756)	-76.0	.015 (-36.533)
-24.2	.737 (-2.657)	-39.0	.44 (-7.138)	-77.0	.012 (-38.292)
-24.4	.733 (-2.701)	-40.0	.42 (-7.533)	-78.0	.01 (-40.128)
-24.6	.729 (-2.747)	-41.0	.401 (-7.941)	-79.0	.008 (-42.113)
-24.8	.725 (-2.793)	-42.0	.382 (-8.362)	-80.0	.006 (-44.272)
-25.0	.721 (-2.839)	-43.0	.363 (-8.797)	-81.0	.005 (-46.539)
-25.2	.717 (-2.885)	-44.0	.345 (-9.246)	-82.0	.003 (-49.26)
-25.4	.713 (-2.932)	-45.0	.327 (-9.711)	-83.0	.002 (-52.199)
-25.6	.71 (-2.98)	-46.0	.309 (-10.188)	-84.0	.002 (-55.546)
-25.8	.706 (-3.027)	-47.0	.292 (-10.682)	-85.0	.001 (-59.44)
-26.0	.702 (-3.076)	-48.0	.276 (-11.191)	-86.0	.001 (-64.112)
-26.2	.698 (-3.124)	-49.0	.259 (-11.717)	-87.0	.00 (-69.988)
-26.4	.694 (-3.173)	-50.0	.244 (-12.26)	-88.0	.00 (-78.01)
-26.6	.69 (-3.223)	-51.0	.229 (-12.821)	-89.0	.00 (-91.156)
-26.8	.686 (-3.272)	-52.0	.214 (-13.4)	-90.0	.00 (-50)
-27.0	.682 (-3.323)	-53.0	.20 (-13.998)	90.0	.00 (-50)

Systems With Reliability LLC

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CLIENT: Various /

Date: 8/16/2013

ANTENNA TYPE: FMECR/2-HWS

FREQUENCY: 97.9

PATTERN POL.: Circular

DIRECTIVITY(Peak): 1.39/1.43 dBd

Beam Tilt (Deg.): 0

DIRECTIVITY(Horiz): 1.39/1.43 dBd

Null Fill(s)(%): 0, 0, 0

Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.995 (-0.046)	-4.4	.99 (-0.085)	-12.0	.929 (-0.544)
3.0	.995 (-0.04)	-4.6	.989 (-0.094)	-12.2	.926 (-0.556)
2.8	.996 (-0.035)	-4.8	.988 (-0.103)	-12.4	.924 (-0.568)
2.6	.997 (-0.03)	-5.0	.987 (-0.111)	-12.6	.921 (-0.711)
2.4	.997 (-0.026)	-5.2	.986 (-0.121)	-12.8	.919 (-0.733)
2.2	.998 (-0.022)	-5.4	.985 (-0.13)	-13.0	.917 (-0.757)
2.0	.998 (-0.018)	-5.6	.984 (-0.14)	-13.2	.914 (-0.78)
1.8	.998 (-0.014)	-5.8	.983 (-0.15)	-13.4	.912 (-0.804)
1.6	.999 (-0.011)	-6.0	.982 (-0.161)	-13.6	.909 (-0.828)
1.4	.999 (-0.009)	-6.2	.98 (-0.171)	-13.8	.906 (-0.853)
1.2	.999 (-0.006)	-6.4	.979 (-0.183)	-14.0	.904 (-0.878)
1.0	.999 (-0.004)	-6.6	.978 (-0.194)	-14.2	.901 (-0.904)
.8	1.00 (-0.003)	-6.8	.977 (-0.206)	-14.4	.899 (-0.929)
.6	1.00 (-0.002)	-7.0	.975 (-0.219)	-14.6	.896 (-0.956)
.4	1.00 (-0.001)	-7.2	.974 (-0.231)	-14.8	.893 (-0.982)
.2	1.00 (0)	-7.4	.972 (-0.244)	-15.0	.89 (-1.009)
.0	1.00 (0)	-7.6	.971 (-0.258)	-15.2	.888 (-1.036)
-.2	1.00 (0)	-7.8	.969 (-0.272)	-15.4	.885 (-1.064)
-.4	1.00 (-0.001)	-8.0	.968 (-0.286)	-15.6	.882 (-1.092)
-.6	1.00 (-0.002)	-8.2	.966 (-0.3)	-15.8	.879 (-1.12)
-.8	1.00 (-0.003)	-8.4	.964 (-0.315)	-16.0	.876 (-1.149)
-1.0	.999 (-0.004)	-8.6	.963 (-0.33)	-16.2	.873 (-1.176)
-1.2	.999 (-0.006)	-8.8	.961 (-0.346)	-16.4	.87 (-1.205)
-1.4	.999 (-0.009)	-9.0	.959 (-0.362)	-16.6	.867 (-1.238)
-1.6	.999 (-0.011)	-9.2	.957 (-0.378)	-16.8	.864 (-1.268)
-1.8	.998 (-0.014)	-9.4	.956 (-0.395)	-17.0	.861 (-1.299)
-2.0	.998 (-0.018)	-9.6	.954 (-0.412)	-17.2	.858 (-1.33)
-2.2	.998 (-0.022)	-9.8	.952 (-0.429)	-17.4	.855 (-1.361)
-2.4	.997 (-0.026)	-10.0	.95 (-0.447)	-17.6	.852 (-1.393)
-2.6	.997 (-0.03)	-10.2	.948 (-0.465)	-17.8	.849 (-1.425)
-2.8	.996 (-0.035)	-10.4	.946 (-0.483)	-18.0	.846 (-1.457)
-3.0	.995 (-0.04)	-10.6	.944 (-0.502)	-18.2	.842 (-1.49)
-3.2	.995 (-0.046)	-10.8	.942 (-0.521)	-18.4	.839 (-1.524)
-3.4	.994 (-0.052)	-11.0	.94 (-0.541)	-18.6	.836 (-1.557)
-3.6	.993 (-0.058)	-11.2	.937 (-0.561)	-18.8	.833 (-1.591)
-3.8	.993 (-0.064)	-11.4	.935 (-0.581)	-19.0	.829 (-1.626)
-4.0	.992 (-0.071)	-11.6	.933 (-0.602)	-19.2	.826 (-1.661)
-4.2	.991 (-0.079)	-11.8	.931 (-0.623)	-19.4	.823 (-1.696)

Systems With Reliability

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CLIENT: K228EK	Date: 4/28/2012
ANTENNA TYPE: FMEC/2-HWS	
FREQUENCY: 93.5 MHz	
PATTERN POL.: Circular	
DIRECTIVITY(Peak): 1.39/1.43 dBd	Beam Tilt (Deg.): 0
DIRECTIVITY(Horiz): 1.39/1.43 dBd	Null Fill(s)(%): 0, 0, 0