Mukwonago Baptist Church

Mukwonago, WI

Technical Certifications

As shown below, the proposed facility meets the applicable engineering standards and assignment requirements of 47 CFR §73.807(a) through (g), §73.825, §73.827(a). One facility, WKKV-FM is short-spaced and is discussed in more detail below.

LPFM Channel Study
Mukwonago Baptist Church

REFERENCE						DISPLAY DATES	
42 49 41.56 N.			CLASS = L1			DATA	11-15-23
88 18 25.41 W.			Current Spacings to 2nd Adj.			SEARCH	11-15-23
Channel 262 - 100.3 MHz							

Call	Channel		Location		Azi	Dist	FCC	Margin
WKKV-FM	LIC	264B	Racine	WI	96.9	21.30	66.5	-45.2
W262CJ	LIC-D	262D	Milwaukee	WI	47.6	44.33	38.5	5.8
WSHE-FM	LIC	262B	Chicago	IL	151.2	117.60	111.5	6.1
W260DP	LIC	260D	Pewaukee	WI	18.6	29.20	20.5	8.7
WSJP-FM	LIC-Z	261A	Port Washington	WI	21.0	70.54	55.5	15.0
W262DD	LIC	262D	Janesville	WI	257.9	58.61	38.5	20.1
W260CV	LIC-D	260D	Racine	WI	108.4	41.14	20.5	20.6
WJVL	LIC	260B1	Janesville	WI	261.5	71.42	45.5	25.9
WTLX	LIC	263A	Monona	WI	291.3	95.34	55.5	39.8

All separation margins include rounding

The proposed facility's 60dBu service contour is 5.17 km, meeting the requirements of 47CFR §73.811, which specifies that the contour will be between 4.7 and 5.6 km.

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FM Station Parameters

WKKV-FM  LIC 264 B  Dom  50.000 kW   152 m HAAT MCN    Non-DA
Racine              WI  386.0 m COR AMSL -
Lat = 42 48 18.10,    Lng = 88 02 54.30 - NAD 83
Ihm Licenses, LLC
Fac ID# 68758   BMLH20100809CJO
Dist = 21.31 km,  Azi = 96.9°,  Rev Azi =277.1°

Required Spacing:  (FCC = 66.50 R,  Margin = -45.19 M)
Toward Ref: HAAT = 150.1m, 50.0 kW
Toward Ref: 54 dBu Protected = 65.1 km, Int = 5.96 km
Direct line Ref. Protected Contour = 7.0 km, Int = 1.29 km
Direct line Ref. HAAT = 50.7 meters, 0.085 kW
•Signal at Ref. Site = 78.09 dBu. Dist. to NEW! Int. contour = 80.58 m
 (^ Without considering vertical elevation field.)
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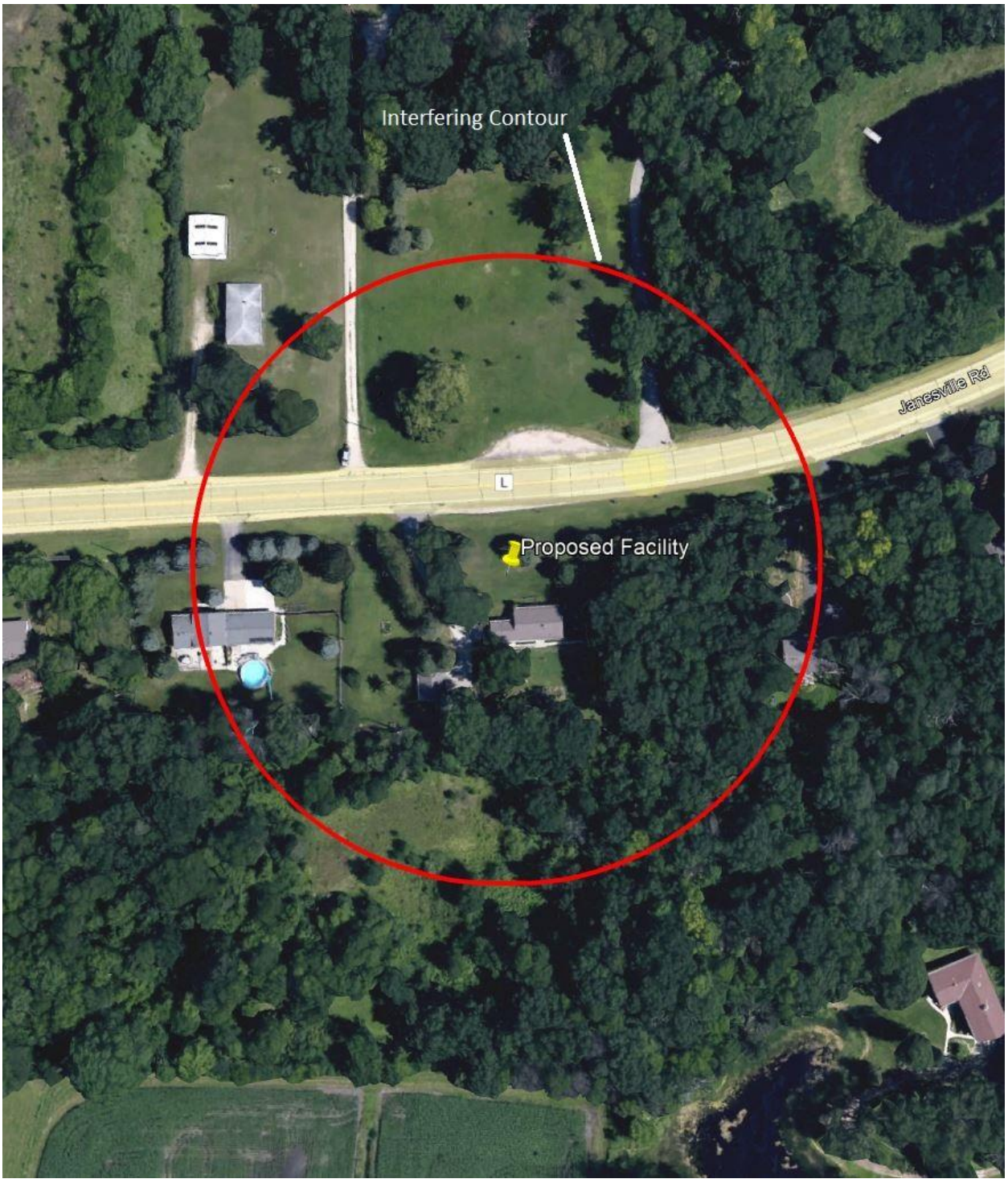
With respect to WKKV-FM (2nd adjacent), the applicant requests a waiver of second adjacent channel separation per 47 CFR §73.807(e)(1). At the applicant's proposed transmitter site, the signal from WKKV is estimated to have a field strength of 78.09 dBμ/m, based on FCC field strength calculations (above). The interfering signal from the proposed facility would be 40 dB stronger, or 118.09 dBμ/m. Also calculated above is the free space distance to the interfering contour, which is 80.58 meters.

The 118 dBμ/m contour is depicted below, superimposed on an aerial view of the proposed location. It encompasses parts of 3 residences that are single story, thus interference would exist if a signal greater than 118dBμ existed below 3 meters above ground.

The proposed antenna would have a center of radiation 30m above the ground. Using the manufacturer's elevation pattern for the proposed antenna, a Shively 6812 0.5λ 3-bay, a maximum signal strength of 114.3 dBu will reach 3 meters above the ground at a distance of 78.2 meters from the antenna. Thus, no interference to any population would be received from this proposed facility. The manufacturer's elevation pattern and free space calculations are also shown below.


Interfering Contour
Janesville Rd
L
Proposed Facility

Antenna Mfg.: Shively Labs
Antenna Type: 6812-3-ss.5
Beam Tilt 0
Gain (Max) 1.022 0.095 dB
Gain (Horizon) 1.022 0.095 dB

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.036	0	1.000	46	0.064
-89	0.007	-43	0.021	1	0.999	47	0.076
-88	0.013	-42	0.004	2	0.995	48	0.087
-87	0.020	-41	0.015	3	0.990	49	0.097
-86	0.026	-40	0.034	4	0.982	50	0.106
-85	0.032	-39	0.055	5	0.972	51	0.113
-84	0.038	-38	0.076	6	0.959	52	0.120
-83	0.044	-37	0.099	7	0.945	53	0.126
-82	0.050	-36	0.124	8	0.928	54	0.130
-81	0.056	-35	0.149	9	0.910	55	0.134
-80	0.062	-34	0.175	10	0.890	56	0.137
-79	0.068	-33	0.203	11	0.868	57	0.139
-78	0.073	-32	0.231	12	0.845	58	0.141
-77	0.079	-31	0.260	13	0.820	59	0.142
-76	0.085	-30	0.290	14	0.793	60	0.142
-75	0.090	-29	0.321	15	0.765	61	0.141
-74	0.095	-28	0.352	16	0.737	62	0.140
-73	0.100	-27	0.384	17	0.707	63	0.138
-72	0.105	-26	0.416	18	0.676	64	0.136
-71	0.110	-25	0.449	19	0.645	65	0.133
-70	0.115	-24	0.482	20	0.613	66	0.130
-69	0.119	-23	0.515	21	0.580	67	0.127
-68	0.123	-22	0.548	22	0.548	68	0.123
-67	0.127	-21	0.580	23	0.515	69	0.119
-66	0.130	-20	0.613	24	0.482	70	0.115
-65	0.133	-19	0.645	25	0.449	71	0.110
-64	0.136	-18	0.676	26	0.416	72	0.105
-63	0.138	-17	0.707	27	0.384	73	0.100
-62	0.140	-16	0.737	28	0.352	74	0.095
-61	0.141	-15	0.765	29	0.321	75	0.090
-60	0.142	-14	0.793	30	0.290	76	0.085
-59	0.142	-13	0.820	31	0.260	77	0.079
-58	0.141	-12	0.845	32	0.231	78	0.073
-57	0.139	-11	0.868	33	0.203	79	0.068
-56	0.137	-10	0.890	34	0.175	80	0.062
-55	0.134	-9	0.910	35	0.149	81	0.056
-54	0.130	-8	0.928	36	0.124	82	0.050
-53	0.126	-7	0.945	37	0.099	83	0.044
-52	0.120	-6	0.959	38	0.076	84	0.038
-51	0.113	-5	0.972	39	0.055	85	0.032
-50	0.106	-4	0.982	40	0.034	86	0.026
-49	0.097	-3	0.990	41	0.015	87	0.020
-48	0.087	-2	0.995	42	0.004	88	0.013
-47	0.076	-1	0.999	43	0.021	89	0.007
-46	0.064	0	1.000	44	0.036	90	0.000
-45	0.051			45	0.051		

Shively 6812 Elevation Pattern (depression only), 3 bay half wave					
Angle	**dist, m**	**h dist, m**	**Field**	**dB Field**	**dBu**
-90	27		0		
-89	27.00411	0.5	0.007	-43.098	84.8
-88	27.01646	1	0.013	-37.7211	90.2
-87	27.03705	1.6	0.02	-33.9794	93.9
-86	27.06593	2.1	0.026	-31.7005	96.2
-85	27.10314	2.6	0.032	-29.897	98
-84	27.14872	3.2	0.038	-28.4043	99.5
-83	27.20277	3.7	0.044	-27.1309	100.7
-82	27.26534	4.2	0.05	-26.0206	101.8
-81	27.33656	4.8	0.056	-25.0362	102.8
-80	27.41652	5.3	0.062	-24.1522	103.6
-79	27.50535	5.8	0.068	-23.3498	104.4
-78	27.6032	6.4	0.073	-22.7335	105
-77	27.71021	6.9	0.079	-22.0475	105.7
-76	27.82657	7.5	0.085	-21.4116	106.3
-75	27.95246	8	0.09	-20.9151	106.7
-74	28.08808	8.6	0.095	-20.4455	107.1
-73	28.23368	9.2	0.1	-20	107.5
-72	28.38948	9.7	0.105	-19.5762	107.9
-71	28.55576	10.3	0.11	-19.1721	108.3
-70	28.7328	10.9	0.115	-18.786	108.6
-69	28.92091	11.5	0.119	-18.4891	108.8
-68	29.12044	12.1	0.123	-18.2019	109.1
-67	29.33173	12.7	0.127	-17.9239	109.3
-66	29.55518	13.4	0.13	-17.7211	109.4
-65	29.7912	14	0.133	-17.523	109.6
-64	30.04025	14.6	0.136	-17.3292	109.7
-63	30.30281	15.3	0.138	-17.2024	109.7
-62	30.57939	16	0.14	-17.0774	109.8
-61	30.87056	16.6	0.141	-17.0156	109.8
-60	31.17691	17.3	0.142	-16.9542	109.7
-59	31.4991	18	0.142	-16.9542	109.6
-58	31.83782	18.7	0.141	-17.0156	109.5
-57	32.19381	19.5	0.139	-17.1397	109.3
-56	32.56788	20.2	0.137	-17.2656	109
-55	32.96091	21	0.134	-17.4579	108.7
-54	33.37384	21.8	0.13	-17.7211	108.4
-53	33.80766	22.6	0.126	-17.9926	108

-52	34.26349	23.4	0.12	-18.4164	107.4
-51	34.74251	24.3	0.113	-18.9384	106.8
-50	35.246	25.2	0.106	-19.4939	106.1
-49	35.77535	26.1	0.097	-20.2646	105.2
-48	36.33208	27	0.087	-21.2096	104.1
-47	36.91784	28	0.076	-22.3837	102.8
-46	37.53442	29	0.064	-23.8764	101.2
-45	38.18377	30	0.051	-25.8486	99.1
-44	38.86803	31.1	0.036	-28.8739	95.9
-43	39.58954	32.2	0.021	-33.5556	91.1
-42	40.35087	33.3	0.004	-47.9588	76.5
-41	41.15483	34.5	0.015	-36.4782	87.8
-40	42.00454	35.8	0.034	-29.3704	94.7
-39	42.90342	37	0.055	-25.1927	98.7
-38	43.85527	38.4	0.076	-22.3837	101.3
-37	44.86428	39.8	0.099	-20.0873	103.4
-36	45.93514	41.3	0.124	-18.1316	105.2
-35	47.07306	42.8	0.149	-16.5363	106.6
-34	48.28387	44.5	0.175	-15.1392	107.7
-33	49.57412	46.2	0.203	-13.8501	108.8
-32	50.95116	48	0.231	-12.7278	109.7
-31	52.42331	49.9	0.26	-11.7005	110.5
-30	54	52	0.29	-10.752	111.2
-29	55.69196	54.1	0.321	-9.8699	111.8
-28	57.51147	56.4	0.352	-9.06915	112.3
-27	59.47261	58.9	0.384	-8.31338	112.8
-26	61.59164	61.5	0.416	-7.61813	113.1
-25	63.88744	64.3	0.449	-6.95507	113.5
-24	66.38202	67.4	0.482	-6.33906	113.8
-23	69.10123	70.7	0.515	-5.76386	114
-22	72.07561	74.3	0.548	-5.22439	114.2
-21	75.34156	78.2	0.58	-4.73144	114.3
-20	78.94272	82.4	0.613	-4.25079	114.4
-19	82.93194	87.1	0.645	-3.80881	114.4
-18	87.37384	92.3	0.676	-3.40107	114.3
-17	92.3482	98.1	0.707	-3.01161	114.2
-16	97.95479	104.6	0.737	-2.65065	114.1
-15	104.32	112	0.765	-2.32677	113.9
-14	111.6063	120.3	0.793	-2.01454	113.6
-13	120.0261	129.9	0.82	-1.72372	113.2

-12	129.8628	141.1	0.845	-1.46287	112.8
-11	141.5028	154.3	0.868	-1.22961	112.3
-10	155.4868	170.1	0.89	-1.0122	111.7
-9	172.5962	189.4	0.91	-0.81917	111
-8	194.003	213.5	0.928	-0.64904	110.2
-7	221.5487	244.3	0.945	-0.49136	109.2
-6	258.3029	285.4	0.959	-0.36363	108
-5	309.7903	342.9	0.972	-0.24667	106.5
-4	387.0608	429	0.982	-0.15777	104.6
-3	515.8977	572.4	0.99	-0.0873	102.2
-2	773.6501	859.1	0.995	-0.04354	98.7
-1	1547.065	1718.7	0.999	-0.00869	92.8

Environmental Effect

The proposed facility is excluded from environmental processing under 47 CFR §1.1306 (i.e., the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments).

The proposed site is not in an officially designated wilderness area, wildlife preserve, flood plain, or near a site that is either listed or eligible for listing in the National Register of Historic Places. The proposed construction will not adversely affect any listed or proposed threatened or endangered species or their critical habitats, or any sites significant to Native American Religious practice, and will not involve any significant change in surface features. The applicant does not propose to light the antenna support structure with high intensity white lighting.

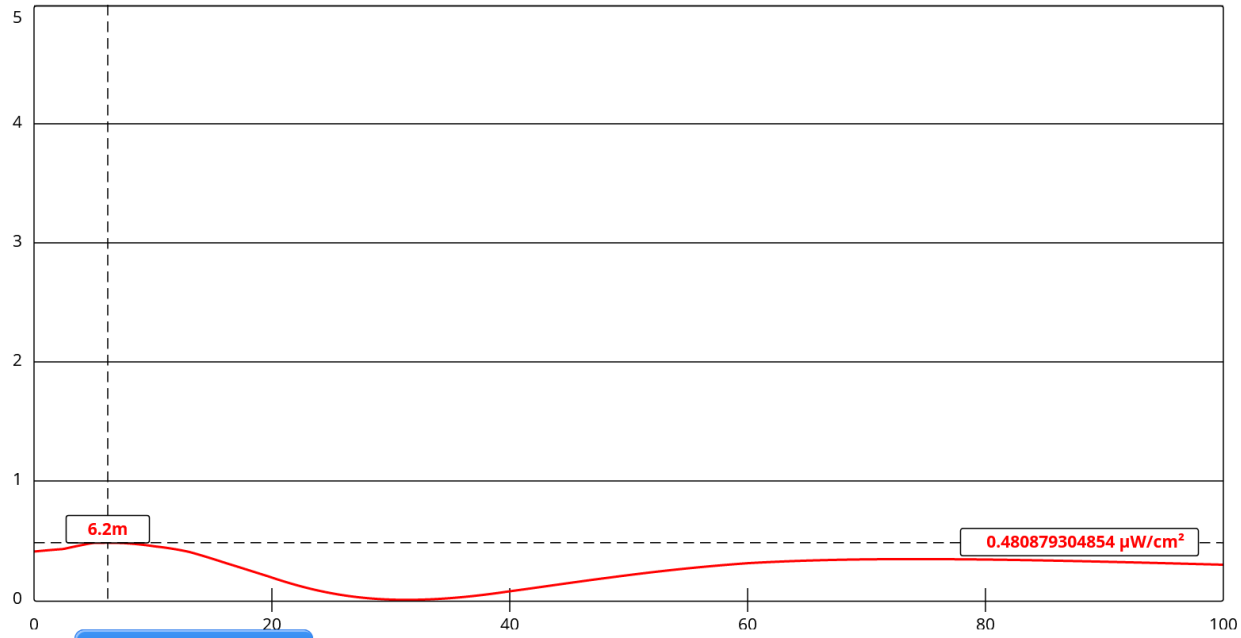
The proposed facility would be located on private property in a residential area. The applicant proposes a Shively 6812 0.5λ 3-bay circularly polarized antenna. No other broadcast emitters would be located on this tower.

Shown below is the output of the Commission's FM Model program, using the maximum effective radiated power of 0.085 kW for this facility's HAAT, resulting in a maximum calculated exposure of 0.48 $\mu W/cm^2$. well below the maximum permissible exposure for the general public, or 0.24% of the limit of 200 $\mu W/cm^2$.

The applicant is cognizant of its responsibility to protect those workers whose duties require that they be in the vicinity of the antenna from exposure to radio frequency fields in excess of those outlined above. To that end, signage will be attached to the base of the antenna support structure warning all workers of the potential for harmful exposure and directing them to contact the responsible person at the broadcast station. That person will ascertain whether the worker will be in areas where there is an exposure hazard, and if so, arrange to shut down the transmitter(s). The permittee/licensee will also coordinate with other users of the site to reduce power or cease operation in order to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of Commission guidelines.

For these reasons, the applicant believes that a Commission grant of this application would not have a significant environmental impact.

FM Model for the proposed facility:



View Tabular Results +

Channel Selection	Channel 262 (100.3 MHz)		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other"		
Height (m)	30	Distance (m)	100
ERP-H (W)	85	ERP-V (W)	85
Num of Elements	3	λ	0.5
Num of Points	500	Apply	

Reasonable Site Assurance

The applicant has been given assurance by the owner of the site that it may construct the proposed facility at W111 County Road L, East Troy, WI. The owner's name is Wes Gebhard and a contact phone number is (414) 916-5275.